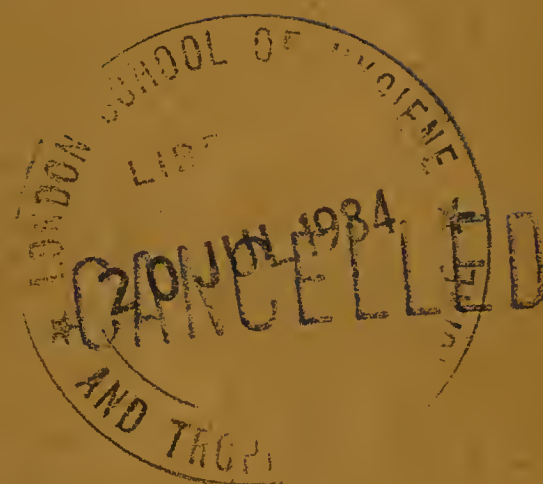


NORTH



BORNEO

*ANNUAL REPORT*  
OF  
The Medical Department  
FOR THE YEAR  
1961



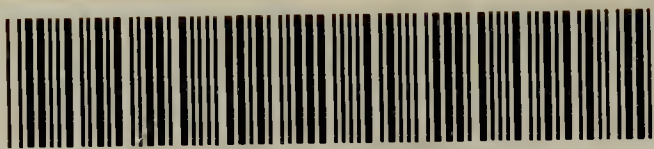
*Published by Authority*

Price: \$1.50

JESSELTON:

PRINTED AT THE NORTH BORNEO GOVERNMENT PRINTING OFFICE,  
W. A. SPRADBROW, I.S.O., GOVERNMENT PRINTER.

1962



22501397529

NORTH



BORNEO

*ANNUAL REPORT*  
OF  
The Medical Department  
FOR THE YEAR  
1961



JESSELTON:  
PRINTED AT THE NORTH BORNEO GOVERNMENT PRINTING OFFICE,  
W. A. SPRADBROW, I.S.O., GOVERNMENT PRINTER.

1962

WELLCOME INSTITUTE LIBRARY	
Coll.	wellcome
Call	+
No.	100000
	100000
	.L.B.6
	N.B.6

1967



## CONTENTS

<i>Section</i>	<i>Subject</i>	<i>Paragraphs</i>
I	Introduction ... ..	1 to 5
II	General Remarks 1961 ... ..	6 to 10
III	Administration and Finance ... ..	11 to 14
IV	Staff ... ..	15 to 16
V	Training	
	Overseas ... ..	17 to 19
	Local ... ..	20 to 25
VI	Public Health	
	A. Vital Statistics ... ..	26 to 30
	B. Endemic and Epidemic Diseases	
	Malaria: The Eradication Programme ... ..	31 to 52
	Tuberculosis: The Control Programme ... ..	53 to 61
	Leprosy ... ..	62
	Yaws ... ..	63
	Venereal Diseases ... ..	64
	Endemic Goitre ... ..	65
	Quarantinable Diseases ... ..	66
	Poliomyelitis and Encephalitis ... ..	67
	Enteric Fever ... ..	68
	Other Intestinal Infections and Infestations ... ..	69
	Paracholera El Tor ... ..	70
	Diphtheria, Whooping Cough and Measles ... ..	71
	Influenza ... ..	72
	Trachoma and other Ophthalmic Infection ... ..	73
	C. Nutrition ... ..	74 to 76
	D. Environmental Sanitation ... ..	77 to 82
	E. Personal Health Services	
	Maternal and Child Health Services ... ..	83 to 87
	School Medical Service ... ..	88
	F. Health Education ... ..	89
VII	Medical Institutions	
	A. Hospitals and Dispensaries ... ..	90 to 109
	B. Special Hospitals ... ..	110 to 113
	C. Specialised Services	
	Dental Services ... ..	114 to 117
	Surgical Services ... ..	118 to 120
	Obstetrical Services ... ..	121
	Physiotherapy ... ..	122
	Laboratory Services ... ..	123 to 124
	X-Ray Services ... ..	125 to 127
VIII	Non-Government Medical Services	
	Services provided by Estates and Companies ... ..	128 to 131
	Services provided by Missions ... ..	132
IX	Voluntary Organisations and Social Welfare ... ..	133 to 137
X	Visitors 1961 ... ..	138

## APPENDICES

1. Staff of Medical Services.
2. General Organisation of the Malaria Eradication Programme.
3. Return of Morbidity: Total Outpatients and Inpatients.
4. Return of Morbidity: Diseases.



## **SECTION I: INTRODUCTION**

North Borneo, whose mid-year population (1961) was estimated at 473,976 is a relatively healthy country by tropical standards. Severe tropical diseases such as filariasis, yellow fever, plague and relapsing fever, are not encountered; and it is over fifty years since smallpox was recorded.

Government medical institutions include two large general hospitals, six cottage hospitals, thirty-four dispensaries and fifty-eight maternal and child health clinics, also a mental hospital.

Non-Government medical institutions include two Estate hospitals and fifty Estate dispensaries for the care of employees and their families. In addition, Missions operate three small maternity homes and six dispensaries.

(2) There were forty-eight medical practitioners on the register at the end of the year of which thirty-three are normally resident. Fifteen of these doctors are in the service of Government. In addition two other Government doctors are exempted from registration under special provisions in the relevant Ordinance.

(3) There were two Registered Government Dental Officers. Fifty-six private dentists not registrable were issued with licences under the Poisons and Deleterious Drugs Ordinance to possess and use a dental syringe and certain drugs.

(4) There is only one qualified pharmacist in the country who is self-employed. 334 annual licences to sell poisons on a restricted basis were issued to business concerns during the year.

(5) The number of midwives registered under the Midwives Ordinance was 98.

## **SECTION II: GENERAL REMARKS, 1961**

(6) The major event of the year was the conversion, on July 1st, of the Malaria Control Scheme into a programme aimed at eradication of that disease from the whole territory.

As in the case of the old control scheme, both the World Health Organization and UNICEF are joint participants with the Government. The Plan of Operations, signed by the three bodies, covered all aspects of the programme including an outline of the expansion of area health services required to ensure maintenance of eradication.

During the year the first phase of the scheme to control tuberculosis ended with the return to Australia of the five experts provided by that country under the Colombo Plan. When they left, the programme was well established.

(7) Building of a new cottage hospital began at Lahad Datu where a Medical Officer will be posted next year. At Penangah, Sandakan Residency, a new dispensary and its staff quarters were nearly completed. The staff for this dispensary moved from the dispensary at Kuala Tongod, the running of which was taken over by a health visitor of the Anglican Mission.



Government medical institutions were again well supported by the public, the total attendances being 572,288. There were 22,237 in-patients. Both these figures exceed those recorded in any previous year.

Ten additional maternal and child health clinics were put into operation during 1961. A new health centre was completed at Keni-ngau, and another commenced at Labuan. Attendances at clinics again increased substantially.

(8) The staff position so far as Medical Officers are concerned again gave cause for concern. At the end of the year three vacancies remained, though there were prospects of filling one of them early in 1962. Recruitment of other categories progressed satisfactorily, with the exception of nursing posts for which the response was disappointing. The training programme, both overseas and at home, was well maintained.

(9) There were no major outbreaks of communicable disease. The total number of malaria cases diagnosed at all Government medical institutions fell sharply from 24,539 in 1960 to 14,392. In most cases the diagnosis was made on clinical grounds, and it is estimated, from sample surveys, that about 3,000 would have shown a positive blood film.

A total of 1,568 cases of pulmonary tuberculosis were notified; the average over the previous past five years being 1,357. 1,524 cases were treated at Government medical institutions, of whom forty-six died. Tuberculosis continues to cause much ill health requiring prolonged treatment, and in consequence, prolonged absence from work. The most advanced cases continue to be observed amongst the Chinese population, while the Indigenous community suffer more from the florid type of lesion. Cases of diphtheria again increased, there being forty-three notifications as against thirty-three in 1960. The United Nations Children's Fund have generously agreed to provide 20,000 full immunising courses of vaccine annually against this disease, combined with anti-whooping cough and tetanus vaccine.

Small outbreaks of typhoid fever occurred in two areas of the country during the year, and as usual, dysentery, diarrhoea, and intestinal helminthic infestations featured prominently in morbidity returns. Although improvements in environmental sanitation continued to progress in urban areas; hygiene in rural areas remains primitive or non-existent. Here is a most important field of future endeavour. When, in the second half of the year, outbreaks of paracholera were reported from Sarawak, Hong Kong and the Philippines, campaigns of anti-cholera inoculations were organised on a large scale in this country. No cases had occurred here by the close of the year.

(10) The Voluntary Organisations again made a valuable contribution to medical care and welfare. Estate and Mission operated medical services were maintained satisfactorily.

### **SECTION III: ADMINISTRATION AND FINANCE**

(11) The Department is administered by a Director assisted by a Deputy Director of Medical Services, (the latter also acting as a Medical Officer of Health) with a Principal Matron, a Medical Accountant/Storekeeper and a Chief Health Inspector at Headquarters in Jesselton.



There are seven medical areas each including one or more administrative districts, and in the charge of a Medical Officer who is also the appointed health officer to the local authorities therein. Each area is based on a hospital, and contains a number of dispensaries, and, in one area, an additional hospital. Medical area headquarters are sited at Jesselton, Sandakan, Tawau, Labuan, Kudat, Keningau and Beaufort. Maternal and child health and environmental sanitation services are fully integrated with the general area services. The work of tuberculosis control is partly integrated, but the malaria service is still largely autonomous from the area services though, in the set plan for the eradication programme, integration is an essential part of the Campaign's development.

(12) During the year plans were outlined for an integrated area health service based on eight areas each of which will be in charge of a Medical Officer freed from hospital clinical duties. At the moment all Medical Officers are engaged on these duties. Within each future area health service there will be district health centres with their satellite dispensaries including mobile dispensaries and, at lowest level, village centres staffed by a rural health nurse/midwife and a general purpose male health worker; one such village centre being estimated as the requirement for 2,000 population. This plan was made in connection with the maintenance phase of malaria eradication.

(13) The actual running expenditure by Government on medical services in 1961 was \$4,596,066.37. This figure refers to departmental expenditure only, and does not include sums spent in the towns on municipal conservancy measures such as nightsoil disposal, scavenging inspections by local authority officials, and emoluments of local authority health personnel. A summary is given below:—

Personal emoluments ...	...	\$2,445,433.18
Other charges annually		
recurrent ...	...	2,085,766.43
Special expenditure ...	...	64,856.76
		<hr/>
TOTAL ...		\$4,596,066.37
		<hr/>

Capital expenditure totalled \$238,825 of which \$143,633 came from Colonial Development and Welfare Funds, the remainder from Government funds.

The sum spent by Government on overseas training of medical personnel was approximately \$11,500.

Revenue collected during the year amounted to \$415,339.

(14) The value of the generous UNICEF aid to the Malaria and Maternal and Child Health programmes during 1961 was approximately \$225,000; and the estimated expenditure of the World Health Organization on the former programme was \$151,500.

In addition, valuable aid was given to tuberculosis control by the Australian Government under the Colombo Plan.

## SECTION IV: STAFF

(15) Once again, considerable difficulty was experienced in maintaining the approved establishment of Medical Officers though recruitment of other personnel presented no major difficulties. At the end of the year twelve of the fifteen posts for Medical Officers were filled. The following changes in the staff establishment were approved by the Legislature:—

<i>Post</i>	<i>Establishment</i>		<i>Increase</i>	<i>Decrease</i>
	1960	1961		
Medical Officer ...	13	15	2	—
Nursing Sisters ...	5	9	4	—
Chief Health Inspector	—	1	1	—
Senior Health Inspector	3	2	—	1
Probationer Nurses ...	181	191	10	—
Assistant Nurses ...	20	40	20	—
Rural Health Nurses ...	29	39	10	—
Malaria Technicians ...	31	66	35	—
Assistant Malaria Technicians ...	24	68	44	—

(16) Appendix 1 to this report lists the establishment against the actual number of personnel in the posts at 31st December; grouping them into the different branches of the departmental working organization.

Apart from doctors; the establishment for nursing personnel is considered too small for the number of beds. The number actually allocated to hospitals represents a ratio of one per 4.60 beds. The true ratio is in fact lower since a number of hospital assistants are engaged full time on X-ray and dispensing duties, no separate cadres for this work having yet been established. At present therefore it is difficult to release either hospital assistants to operate new rural dispensaries, or trained nurse/midwives for public health nursing.

Development of health work, especially since the Public Health Ordinance came into force, has shown the need for a larger health inspectorate. Local authorities are beginning to develop their own health services, and this year a total of eleven rural health nurses and two assistant (village) health inspectors posts appeared on their establishments.

The large increase of malaria personnel reflects the expansion of the old scheme to control malaria into one of country wide eradication.

## SECTION V: TRAINING

### *Overseas Training*

(17) During the year twenty-five members of the Department were engaged on courses overseas as follows:—

<i>Course</i>	<i>Number</i>	<i>Place</i>	<i>Remarks</i>
Medical Degree ...	2	Australia	Colombo Plan one 5th year; one 2nd year. Previously hospital assistants.





(Broadcasting and Information Department)  
Antimalarial Sprayman at Work.





Interior of a Tuberculosis Ward at The Queen Elizabeth Hospital: Jesselton.

(Broadcasting and Information Department).



<i>Course</i>	<i>Number</i>	<i>Place</i>	<i>Remarks</i>
Bacteriology (B. Sc) ...	1	Australia	Passed with Honours. Colombo Plan.
Pharmacy ...	1	Australia	1st year Colombo Plan.
Dispensing and Store-keeping ...	1	Australia	A Hospital Assistant Colombo Plan.
Midwifery (S. C. M.)	5	United Kingdom	2 Government Scholarships; 2 Sino-British Fellows: 1 Red Cross sponsored (locally trained nurses).
Theatre Nursing ...	2	Australia	(Locally trained nurses) Colombo Plan.
	1	United Kingdom	Locally trained nurse. Sino-British Fellowship.
Mental Nursing ...	2	United Kingdom	Government Scholarships
Malaria Eradication	5	Philippines and Taiwan	W. H. O. Fellowships.
Dental Nurse ...	2	New Zealand	Colombo Plan.
Diploma Royal Society of Health for Health Inspector ...	2	Singapore	Government Scholarship.
Tuberculosis Nursing	1	United Kingdom	N.A.P.T. Scholarship

#### *Other Medical Students*

(18) In addition eleven more medical students were at various stages of their course (see below) and one local doctor, qualified in Australia, was studying for the F. R. C. S. in the United Kingdom.

<i>Place</i>	<i>Sponsorship</i>	<i>Number and expected date of qualification</i>
Australia ...	Colombo Plan	2: 1962
Australia ...	Private ...	1: 1963
Australia ...	Colombo Plan	2 } 1964
Australia ...	Private ...	1 }
Australia ...	Colombo Plan	1 }
Canada ...	Commonwealth Scholarships	1 } 1966/67
Australia ...	Colombo Plan	2 } 1967/68
Australia ...	Private ...	1 }

#### *Other Students*

(19) At 31st December, 1961, nineteen local girls were under-going training as nurses in the United Kingdom; all having travelled there under private sponsorship.

## LOCAL TRAINING

### *Nurses Training School*

(20) This school at the Queen Elizabeth Hospital, Jesselton, continued to flourish under the able direction of a sister tutor and assistant tutor supported by the matron and nursing sisters of the hospital. The standard is high, and examination papers were again based on those set by the General Nursing Council of England and Wales, with some tropical additions in medicine.

The training has already received one year's recognition by the Council, full recognition being dependent on an increase in the number of nursing sisters (whose training is approved by the Council), in the hospital as a whole.

(21) Forty-nine nurses and hospital assistants were in training during the year. Seven persons passed the final examination and twelve the preliminary examination. Of twenty-four new entries, twenty-one passed the preliminary orientation examination and became probationers: the remaining three pupils resigned.

### *Rural Health Nurses*

(22) During the year the old title of village midwife was dropped in favour of the above, since the two year training includes the elements of public health nursing and infant welfare. The first year of training is at the Queen Elizabeth Hospital, Jesselton, and includes formal lectures at the Nurses Training School. During the second year of training the students are attached to Jesselton Health Centre and also to clinics in the rural districts. Of twenty girls under training during the year, two passed the final examination and seven the first examination, two failing the latter.

### *Malaria Eradication Training*

(23) During the year seventy-nine technicians or assistant technicians attended the five week formal basic training course at the malaria training school in Keningau. This is an intensive course conducted by senior personnel attached to the programme including the WHO Malariologist, the Government Malariologist, the WHO Sanitary Engineer and the WHO Entomologist. Other malaria training courses were given in simple parasitology; seven candidates; and entomological techniques; two candidates.

### *Tuberculosis Control Training*

(24) Seventeen technicians and fourteen assistant nurses continued to receive in-service training from the resident Colombo Plan (Australia) personnel.

### *Other In-Service Training*

(25) In-service training with some formal lectures was given to Assistant Nurses at the Duchess of Kent Hospital, Sandakan; whilst at other hospitals, ward training only was given to this category of staff.

Two probationer health inspectors and two village health inspectors continued in-service training, in the Jesselton Town Board area and surrounding rural districts.



## SECTION VI: PUBLIC HEALTH

### SUBSECTION A: VITAL STATISTICS

(26) The Registrar-General is also the Administrator-General. At district level registration of births and deaths is done by the Medical Department, whereas at kampong level, local headmen assist in the work.

The Director of Medical Service has access to the Registers in Jesselton, and, with the help of the Statistics Department, arranges various analyses of the data obtained from districts.

(27) Registration of births and deaths varies considerably from district to district depending on such factors as communications, number of registration points, and efficiency of local headmen. Thus in some remote areas it is unlikely that more than thirty per cent of events are recorded, whilst in well developed urban areas registration approaches a hundred per cent. As a result, birth and mortality rates recorded for the country as a whole fall far short of the true figure. It is believed however, that, as in some other parts of South East Asia, the death rate is declining and the birth rate either rising, or remaining at its usual high level.

Nearly eighty per cent of all deaths occur without either a doctor or other member of the medical department having been in attendance, so a considerable variety of death causes appear in the registers.

#### 1961 Population

(28) The mid-year population (1961) was estimated at 473,996 comprised of 323,738 Indigenous, 106,542 Chinese and 43,696 other races.

#### *Births and Deaths Registered*

##### *(29) Total Live Births and Deaths Registered*

	1958	1959	1960	1961
Births Registered ...	12,818	13,373	14,964	15,898
Deaths Registered ...	3,358	3,370	4,166	3,324
Crude birth rate 1961 =	33.5 per 1,000 living			
Crude death rate 1961 =	7.0 per 1,000 living			

##### *Live Births and Deaths Registered — by sex — 1961*

BIRTHS			DEATHS		
Total	Male	Female	Total	Male	Female
15,898	8,290	7,608	3,324	1,862	1,462

##### *Live Births and Deaths Registered — by race and sex — 1961*

Race Groups		Births			Deaths		
		Total	M	F	Total	M	F
Indigenous	...	9,954	5,225	4,729	2,473	1,358	1,115
Chinese	...	4,209	2,152	2,057	197	413	284
European and Eurasians	...	68	36	32	3	3	—
Others	...	1,667	877	790	151	88	63
		15,898	8,290	7,608	3,324	1,862	1,462

*Excess of births over deaths by Main Racial Group*

<i>Race Groups</i>				<i>Excess of Births over Deaths</i>	<i>Ratio Births/Deaths</i>
Indigenous	...	...	...	7,481	4.03
Chinese	...	...	...	3,512	5.04
European and Eurasians	...	...	...	65	22.67
Others	...	...	...	877	11.04

*Infant Mortality Rate: 1961*

(30) The infant mortality rate appears, from the statistics given below, to have decreased very substantially, but this cannot be taken at face value owing to inaccuracies of registration.

INFANT MORTALITY RATE

*Deaths under one year of age per 1,000 live births by Residency, 1961 (showing rates in 1960 as comparison)*

<i>Residency</i>			<i>Live Births</i>	<i>Deaths under one year of age</i>	<i>IMR 1961</i>	<i>IMR 1960</i>
West Coast	...	...	6,532	394	60.3	72.5
Sandakan	...	...	2,490	126	50.6	71.4
Tawau	...	...	2,629	116	44.1	90.7
Interior	...	...	3,577	123	34.4	59.8
Labuan and Mempakul			670	59	88.1	81.2
TOTAL			15,898	818	51.5	72.0

INFANT MORTALITY RATE

*Deaths under one year of age per 1,000 live births by main racial groups*

<i>Racial Groups</i>		<i>Live births 1961</i>	<i>Death under 1 year</i>	<i>IMR</i>
Indigenous	...	9,954	518	52.0
Chinese	...	4,209	128	30.4
Others	...	1,735	182	104.9

SUBSECTION B: ENDEMIC AND EPIDEMIC DISEASES

*Malaria: The Eradication Programme*

(31) On 1st July, 1961, the combined Government/WHO/UNICEF Malaria Control Project was converted to a programme of total Malaria Eradication, and the Plan of Operations signed by these three participating organizations.

The estimated cost to the completion of this at the end of 1968 will be approximately \$7,500,000, of which Government is to provide nearly two-thirds, and the two international bodies the remainder. In addition to its other provisions, the World Health Organization generously agreed to provide a sum of over \$600,000 from its Malaria Eradication Special Account towards training and local costs.



The decision to declare an eradication campaign was made following proof obtained during 1961 that transmission of malaria had been interrupted in certain areas. Eradication Day, 1st July was widely celebrated throughout the country.

(32) At the time of conversion to an eradication project, some 143,800 persons in seventeen districts were under the attack phase of the campaign, that is to say twice yearly residual spraying of dwellings and mass chemotherapy. One area, Labuan Island, having a population of 14,900, had already entered the consolidation phase of monthly surveillance without spraying; six months previously.

### *The Plan of Eradication*

(33) The malarious areas of North Borneo which were not treated during the control project are populated by about 245,200 people. Following preliminary reconnaissance they will enter the attack phase in three stages at six month intervals.

The first stage involving about 94,900 persons in the districts of Beaufort, Sipitang, Kuala Penyu, Papar, Jesselton, Ranau and Tuaran began on July 1st, and brought the total population under the attack phase of the campaign to some 238,700, leaving 150,300 in the country's malarious areas to be included in January 1962 (Kudat district and northern Kota Belud district) and July 1962 (the remainder of Sandakan and Tawau Residencies). These figures relate to the 1960 census and have of course increased since then.

(34) The country has been grouped into eight sectors for the purposes of the campaign, each in the charge of a Sector Leader. The whole field operation is controlled from a base at Keningau with a sub-base at Sandakan for the two east coast sectors.

The sectors are as follows:—

<i>Name of Sector</i>	<i>Districts involved</i>	<i>Population (1960 Census)</i>	<i>Phase of Campaign at 31.12.61</i>
Labuan	Labuan Island ) Keningau )	14,904	Consolidation
Keningau	Tenom ) Tambunan ) Pensiangan )	47,704	Attack with Surveillance
Beaufort	Beaufort ) Kuala Penyu ) Sipitang ) Jesselton )	39,701	Attack
Jesselton	Rural ) Papar ) Tuaran )	56,962	Attack
Tuaran	Kota Belud ) Ranau )	76,613	Attack (except north of Kota Belud district)
Kudat	Kudat ) Sandakan )	51,156	Preparatory
Sandakan	Rural ) Beluran ) Kinabatangan )	45,147	Half preparatory half attack

Tawau	...	Tawau	) ...		Five sixths prepa-
		Lahad Datu	) ...	71,719	tory one sixth
		Semporna	) ...		attack
				<hr/>	
				403,906	
				<hr/>	

(35) In order to decentralise assessment work, five laboratories have been planned, of which three; at Keningau, Jesselton and Kudat were in operation by the end of the year. A further eighteen microscope points are to be set up at rural dispensaries. Entomological laboratory work is carried out at Keningau, and a sub-laboratory is planned at Sandakan next year.

(36) There are four main divisions of the programme each in charge of a separate officer—Spraying Operations; Epidemiology/Assessment, Administration, and Health Education. A special sub-branch of the organisation known as the “Kalimantan Cover Operation” ascertains and treats immigrants who cross the land border with hyperendemic Kalimantan through a system of four check posts sited in depth.

Senior personnel engaged in the programme in 1961 included a Government Medical Officer (Malariologist); WHO Senior Malaria Adviser (Malariologist), WHO Entomologist, WHO Sanitary Engineer; and two Government senior technicians. Ten senior staff meetings were held during the year. These were presided over by a senior officer from Medical Department headquarters, and served the purpose of keeping progress under frequent review and ensuring maximum coordination of effort. Appendix 2 gives a chart of the general organization of the eradication programme.

(37) Each sector had an allocation of “attack squads” the number and composition of these being based on the total structures to be sprayed, the terrain, and communications. The squad contains a leader, a drug administrator cum parasite surveyor, and from two to five spraymen.

Surveillance personnel are provided at approximately one per 4,000 people. Malaria Detection Posts are organised in sectors under surveillance; this being termed, passive surveillance.

Sectors are allocated their own transport and each also has its own store and advance stores.

(38) At the end of the year general sector statistics were as follows:—

#### SECTORS UNDER CONSOLIDATION

Name of Sector	Malaria				
	Attack	Surveillance	Detection	Vehicles	Boats
	Squads	Canvassers (Active)	Posts (Passive)		
Labuan Island ...	1	3	6	—	—
In reserve for focal operations if necessary					



## SECTORS UNDER ATTACK AND SURVEILLANCE

Keningau	...	9	14	76	2	—
----------	-----	---	----	----	---	---

## SECTORS WHOLLY UNDER ATTACK

Beaufort	...	5	—	3	—	2
Jesselton	...	9	—	1	2	—

## SECTORS PARTIALLY UNDER ATTACK

Tuaran	...	14	—	2	2	—
Sandakan )	...	7	—	3	—	4
Tawau )			—	3		1 sea going

## SECTORS ABOUT TO COME UNDER ATTACK (PERSONNEL ASSEMBLED)

Kudat	...	8	—	2		1 sea going
-------	-----	---	---	---	--	----------------

## SUMMARY OF WORK CARRIED OUT 1961

*Spraying and Mass Chemotherapy*

(39) With the exception of Labuan island where spraying ended in 1960, all areas under the old control scheme (population 143,800) received two cycles of spraying and mass chemotherapy during the year; whilst the first expansion areas of the eradication programme (population 94,920) received one cycle between July and December. The cycles were completed on schedule. The total number of structures sprayed during the second semester (population 236,920) was 72,788 including farm huts. During the first semester 44,414 structures were sprayed.

Two insecticides were used: DDT at 2 gms. per square metre and dieldrin at 0.6 per square metre, the latter in the Jesselton sector and a small part of the Keningau sector only. Experiments conducted by the WHO Entomologist confirmed that *A. sundaicus*, a prominent vector in the Jesselton sector, is susceptible to DDT, which will therefore replace dieldrin in this area during 1962. Mass chemotherapy was given at the time of spraying in the form of tablets combining chloroquine base and pyrimethamine.

*Surveillance operations*

(40) Active and passive case detection was carried out in the Keningau and Labuan sectors; the former resulted in over 135,000 visits to 12,079 houses throughout the year. Epidemiological investigations were made on every case in an endeavour to trace its source. All confirmed cases were given a course of radical treatment.

*Parasitology*

(41) During the year a total of 29,686 blood films were examined in connection with surveillance, infant parasite surveys, index area surveys, mass surveys, check post, and child surveys.

### *Entomology*

(42) Routine entomological assessment included the following techniques:—

- Day and night indoor and outdoor resting densities
- Night man biting rates
- Infection (sporozoite) rate
- Survival ratio of vectors found in houses
- Insecticide susceptibility tests
- Ratio of nulliparous females (or age composition)
- Breeding density
- Window trap densities (night)

Special observations were made on dosage trials; on deterioration of thatched roofs after spraying; and on bed-bug resistance.

### *Preparatory Phase*

(43) Preparatory phase operations during the year included index area parasitological and entomological surveys in the Ranau and Kudat districts; geographical reconnaissance and health education in areas still to be sprayed and training of new recruits. New quarters were completed for the sector leaders of the Jesselton and Tuaran sectors, and more were put under construction at Sandakan, Kudat and Tawau.

### *Health Education and Training*

(44) This was organised on a national and local basis, the former being arranged at the headquarters of the Medical Department, the latter at field headquarters Keningau. Broadcasts, press releases, and several articles on malaria and its eradication made up the bulk of the national effort. In addition an illustrated pamphlet was printed in Malay, Chinese and English and disseminated widely through District Offices and by field staff engaged in the programme. There is no doubt however that the onus of explaining the aims and reasons for the campaign lies heaviest on the staff who carry it out; since they visit every household.

### *Training*

This is outlined under Section V of this report.

## ASSESSMENT OF RESULTS DURING 1961

### *Labuan Sector*

(45) At the end of 1961, a full year of consolidation in the Labuan Island Sector had produced no cases of indigenous malaria in 1,325 slides taken from fever cases during active and passive surveillance; and at mass survey. Thus, eradication of the disease appears to be near at hand from this area where the parasite rate was once as high as seventy-five per cent. It is of interest to record that during 1961, no trace of the original main vector, *A. balabacensis*, was found on the island.



*Keningau Sector*

(46) Unfortunately the good results in Labuan were not repeated in the *Keningau Sector*, where it was hoped to stop spraying and enter the consolidation phase in January 1962. Assessment over the whole year in this sector produced the following data:—

<i>Type of Sample</i>	<i>No. blood films</i>	<i>Positives</i>	<i>% Positives</i>
Fever cases ... ..	5,904	94	1.6
Mass survey ... ..	3,574	20	0.6
Case investigation ...	1,571	33	2.1
Infants ... ..	2,800	13	0.5
Children 2—10 years ...	583	4	0.7
Indonesian Immigrants	424	30	7.1
	14,856	194	1.5

## (55 Indigenous infections)

The above showed that the criteria for stopping the attack phase of general spraying and mass chemotherapy had not been met. The deterioration was more evident during the second half of the year, earlier results having been less unsatisfactory. The proved cases were widely distributed and spraying could not therefore be limited to foci. This was particularly disappointing in view of the much better results recorded in the area during 1960, and a special conference was held to consider the causes of the setback. Susceptibility tests showed that no vector was resistant to the insecticide. The most likely causes appeared to be connected with one or more of the following:—

- Immigrants not fully ascertained at check-posts
- Resettlement from, as yet, unsprayed areas of North Borneo
- Failure to achieve total cover spraying.

It was therefore decided to continue the attack phase in the whole sector, and to conduct a special field investigation aimed at determining the cause, and advising on the remedy. This investigation was under-way at the end of the year.

*Beaufort Sector*

(47) Only half the population of this sector had come under the attack phase during the original control scheme, but the remainder of the area received its first cycle of spraying during the second half of the year. Assessment by infant parasite surveys showed a rate of less than 0.1 per cent throughout the year from a large sample of over 1,750 infants representative of the whole area. If this is maintained it will be possible to commence full surveillance a year ahead of schedule, with a view to commencing consolidation a year later and reducing the whole schedule for the sector.

*Jesselton Sector*

(48) The opening of the full eradication programme brought the whole of this sector into the attack phase. The infant parasite rate over the year was 0.5 per cent, and here, as in Beaufort, there are prospects of completing the campaign in less time than estimated.

### *Tuaran Sector*

(49) The eradication programme brought the remainder (25,000 people) in Tuaran district and the whole of Ranau district (17,000 people), into the attack phase. The latter had previously not been sprayed, and the base-line infant parasite rate was recorded at 8.5 per cent. At the end of the year the rate for the rest of the sector under operations was 1.4 per cent.

### *Other Sectors*

(50) The attack phase continued at control scheme level over limited areas of the Sandakan and Tawau Residencies, involving about half the malarious areas of the former and a sixth of the latter. The infant parasite rates in sprayed areas at the end of the year were as follows:—

<i>Residency</i>		<i>District</i>	<i>Population Sprayed</i>	<i>Infant Parasite Rate</i>	
				1960	1961
Sandakan ...		Beluran ...	17,543	21%	8%
		Kinabatangan	5,992	11.8%	6.5%
		Sandakan Rural	3,600		1.5%
Tawau ...		Tawau ...	4,375	6.1%	
		Lahad Datu ...	4,869	11.4%	1.8%
		Semporna ...	4,206	3.2%	10.6%

### *Results of Entomological Assessment*

(51) No new vectors were found, there remaining four as follows:—

- A. balabacensis (main vector)
- A. sunaicus (main vector in certain coastal areas)
- A. baezai (main vector in certain coastal areas)
- A. barbirostris (subsidiary vector)

No adverse trends were observed. There was no sign of resistance to the insecticides, nor any entomological evidence to indicate a breakdown in operational vector control.

### *Simian Malaria*

(52) Parasites found in blood slides of monkeys were identified at the Ross Institute, London, as *Hepaticystis* (*Plasmodium*) *taiwanensis*.

### *Tuberculosis: The Control Programme*

(53) The Colombo Plan assisted anti-tuberculosis campaign which opened in 1960 continued to make progress. During 1961, all the experts from Australia returned home, leaving the programme in the hands of the Government staff. The work is integrated with the general medical area services, particularly in so far as notification, diagnosis and treatment are concerned. Prevalence surveys, BCG inoculation, chemoprophylaxis and follow-up are mainly in the hands of the personnel engaged full-time on the control scheme.

The staff so engaged includes a Medical Officer in charge; two health visitors, seventeen technicians, fourteen assistant nurses; and a clerk.



During the year, the Australian Government generously provided further material aid in the form of vehicles and equipment. In addition to the resident personnel also provided; the Australian Government again arranged for an advisory visit by their Colombo Plan Adviser on Tuberculosis, Sir Harry Wunderly.

Assistance provided by NOBATA — the North Borneo Anti-Tuberculosis Association — is outlined in section IX of this report.

Mass miniature X-ray "Odelca" camera units are located at Jesselton, Sandakan, and Tawau and one other is used as a mobile unit. The control scheme is also equipped with laboratory equipment for culture of the bacilli. Three landrovers were in service at the end of the year.

### *Detection Surveys and Prophylactic Measures*

(54) With the exception of a few remote Native Voluntary Schools, all school-children in ten of the country's twenty-one administrative districts, and a number from five more districts, have been skin tested since the campaign began in 1960, negative reactors receiving B. C. G. vaccination. More recently, prophylactic INAH tablets have been distributed to strong reactors for a six months period. The results of skin testing indicated that the infectivity rate was high, and in some areas the majority of children had been infected even before they reached school age. Accordingly, a drive was started to test all infants and children below the age of fifteen. Negative reactors were offered B. C. G. vaccination, and positive reactors have received INAH tablets. This skin testing campaign of pre-school, and non-school children has been run in conjunction with X-rays surveys in six areas. In addition, it has proceeded independently in two districts, where, in the last six months, the teams have visited all the larger kampongs in order to secure as nearly as possible one hundred per cent coverage. Facilities have been arranged in the hospitals at Jesselton, Sandakan, Tawau and Labuan for all new-born babies to be vaccinated. Babies born in their own homes are also vaccinated at the Jesselton Health Centre.

Since the campaign began, 62,621 children have been skin-tested of whom 21,919 received B. C. G. vaccination. Results obtained from three districts are given in the table below, and show very strikingly the early age at which infection occurs. The figures given for one of the districts (Kota Belud) are incomplete as work was still unfinished there at the end of the period under report.

### *Percentage of Children Healf Positive by Age in three Different Districts*

		<i>Jesselton Rural</i>		<i>Tuaran District</i>		<i>Kota Belud District</i>	
		<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
<i>Age</i>		<i>Examined</i>	<i>Positive</i>	<i>Examined</i>	<i>Positive</i>	<i>Examined</i>	<i>Positive</i>
16 plus	...	32	81.27	148	95.94	81	91.35
15	...	31	83.86	55	92.72	40	87.5
14	...	41	85.37	87	93.11	49	77.56
13	...	76	90.78	143	90.90	78	89.74
12	...	105	80.87	162	90.33	94	74.47
11	...	105	82.85	215	86.06	117	82.90
10	...	184	77.71	232	77.61	137	67.26
9	...	176	67.05	203	77.34	115	60.87



		<i>Jesselton Rural</i>		<i>Tuaran District</i>		<i>Kota Belud District</i>	
		<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
<i>Age</i>		<i>Examined</i>	<i>Positive</i>	<i>Examined</i>	<i>Positive</i>	<i>Examined</i>	<i>Positive</i>
8	...	199	65.31	197	77.38	179	68.71
7	...	189	55.01	240	75.84	139	62.59
6	...	170	39.42	225	64.45	86	36.04
5	...	182	35.72	171	58.83	57	38.59
4 and under		843	15.42	1,235	27.37	248	12.50
		2,333		3,293		1,420	

(55) Mass X-ray campaigns have been held in the towns of Jesselton, Labuan, Penampang, Lahad Datu, Tawau, Sandakan; and at the Segama (Lahad Datu) and Borneo Abaca (Tawau) Estates. In addition, tuberculin positive school-children in Jesselton, Sandakan, Tawau, Labuan, Lahad Datu, Tuaran and Penampang towns were X-rayed. Arrangements are also in force whereby all immigrant labour landing at Tawau, Sandakan and Jesselton are X-rayed. Those with abnormal findings suggestive of tuberculosis are repatriated.

*Summary of X-ray surveys*

		<i>Children</i>	<i>Adults</i>	<i>Total</i>
Number X-rayed	...	26,231	28,635	54,866
X-ray abnormalities found	...	317	1,586	1,983
<i>Cases diagnosed as Active</i>				
<i>TB</i>	...	98	568	666
Percentage <i>Active TB</i>	...	0.38	1.98	1.21

The highest percentage of active infection found in adults was recorded in Tuaran town at 5.27 per cent (fifty-six out of 1,094 X-rayed); the lowest being in Government servants at Jesselton; 0.59 per cent (1,515 persons). There was little variation round the mean of 0.38 per cent amongst the children; except in the case of those seen at Tuaran where 1.52 per cent showed active tuberculosis (thirteen cases in 851 X-rayed). It is worthy of note that 504 of the 568 adults diagnosed as active pulmonary tuberculosis at these X-ray surveys were previously unknown cases. The majority of them had minimal lesions.

*Notification*

(56) Notifications of pulmonary tuberculosis; totalled 1,568 during the year including cases detected at surveys. Notifications by actual Medical Areas were as follows:—

<i>Name of Medical Area</i>					<i>Notifications</i>
Jesselton	...	...	...	...	500
Sandakan	...	...	...	...	244
Tawau	...	...	...	...	319
Kudat	...	...	...	...	76
Labuan	...	...	...	...	150
Beaufort	...	...	...	...	138
Keningau	...	...	...	...	141
					1,568

It is not yet feasible to relate these notifications to the population of the respective areas, and so obtain a notification index per centum as there are far too many variables such as, bias in areas surveyed; and relative differences in accessibility of the population to diagnosis.



For these reasons, actual notifications are probably substantially lower than reality.

#### *Estimated Prevalence of active tuberculosis*

(57) At present, the evidence from X-ray surveys indicates that about *two per cent* of the adult population have active pulmonary tuberculosis. The incidence of actual tuberculosis disease amongst children under fifteen is uncertain, though findings at the tuberculin surveys indicate that infection occurs early which, in turn, indicates exposure on a large scale to "open" cases. Social histories taken from patients suffering from tuberculosis have revealed that a distressingly large number of deaths occurs in their infants and young children, though as yet this observation has not been tested statistically with non-tuberculous patients as 'controls'.

#### *Laboratory Diagnosis of tuberculosis*

(58) To date, diagnosis of sputum positive cases has been limited to direct microscopy, but a culture laboratory was equipped at the end of the year by the Australian Government who have also kindly agreed to provide the necessary media; and it is hoped to introduce culture work in 1962. At the same time, the value of direct microscopy, especially in remoter areas, will not be lost sight of, and it is a matter for regret that during 1961 a number of cases diagnosed on clinical and radiological grounds were not also examined microscopically. The outcome of this is more likely to have been 'over', than 'under' diagnosis; but the need to establish more facilities for direct microscopy has been accepted.

#### *Treatment of tuberculosis*

(59) The standard initial treatment for a "virgin" case has been a combination of streptomycin 1.0 gm. paraaminosalicylic acid 12.0 gms. and isoniazide 300 mgms daily. Where it is not feasible to give streptomycin daily, it is given thrice weekly. If it is not possible to give the drug thrice weekly, treatment is limited to the two oral drugs. Initially it was decided that treatment should be given for at least a year, the first three months to be in hospital. In practice, however, pressure on hospital beds, and the patient's social circumstances, have often necessitated a shorter stay in hospital in the case of moderate and minimal lesions. Indeed most cases with minimal lesions detected at X-ray survey are now treated as out-patient from the start. By mid-December (1961) nearly five times as many patients were being treated on an ambulatory basis than in hospital, and it is clear that this form of treatment has substantial social and economic advantages to the patient, though creating problems of supervision and the safeguarding of contacts.

#### *Follow-up of Patients and Contacts*

(60) Now that the average length of stay in hospital has been reduced, so has the number of in-patients absconding. Those who do abscond often have a good reason, usually economic, and are prepared to continue treatment on an ambulatory basis. Although ambulatory treatment is effective if taken regularly, the number of patients who default during the first two years of treatment is still too high. Their difficulties are obvious enough, and include such factors as the distance from the hospital or dispensary; the cost of transport, if they are lucky enough to live on a motor road; and the fact that many of them are



employed and cannot take the time off required. Providing such persons with three months supply of tablets, and expecting them to attend for review at the end of the period has been fruitless.

A new system has therefore been introduced to meet the difficulties involved. It is still in its 'infancy', and so far applicable only to areas within about twenty to twenty-five miles from the towns of Jesselton, Sandakan, Tawau, Semporna and in the island of Labuan. Patients coming from these areas are automatically, according to their address, allocated to one tuberculosis control technician or assistant nurse, who is made responsible for the following measures:—

- ensuring that all children under fifteen years of age in the patient's household are tuberculin tested; given prophylactic isoniazide or BCG vaccine as indicated, or, if tuberculin positive and over three years of age, X-rayed.
- ensuring that adult household contacts are X-rayed.
- recording a social history to elicit economic circumstances, and place of residence in relation to the nearest dispensary.
- periodic checking that the patient is attending for treatment and review.
- a visit to the patient's home if attendance is not regular.

#### *Social Welfare and tuberculosis*

(61) As in other countries, the diagnosis of tuberculosis has brought in its train a number of social problems; affecting both self employed persons, and wage or salary earners. Various forms of relief are provided, mainly by the North Borneo Anti-Tuberculosis Association, including cash grants; food parcels; travel costs for patients due for reviews; and school fees of dependants. However, the total amount of relief given is limited, especially in rural areas, and many patients ill enough to require in-patient treatment, still find it difficult to spend the requisite time away from home.

#### *Leprosy*

(62) Leprosy is not on the surface, a major public health problem in North Borneo, though so long as new cases continue to be detected, there must be conjecture about the number of cases which exist undetected. Almost all patients found continue to be treated at the Rajah Sir Charles Brooke Memorial Settlement near Kuching, Sarawak. By the end of the year there were sixty-five North Borneo patients at this settlement. During the year, five were returned cured, and fourteen new cases admitted there. With the help of the Superintendent of the Settlement in Sarawak, a Leprosy Register has been compiled for this country. A study of this has shown that the area around Tenom, a town in the Interior Residency, has produced relatively more cases than other parts of the country.

Patients who return as cured are followed-up and with the assistance of the Leper Welfare Relief Committee, arrangements are made to re-settle those who are in any difficulty. By use of the Leprosy Register, contacts of cases are followed-up and examined.

#### *Yaws*

(63) A total of 1,667 cases of yaws were diagnosed at rural dispensaries compared with 1,819 in 1960, and 4,394 four years ago. The disease is now limited to several remoter areas, and, as many of the



diagnoses were made on a finding of plantar hyperkeratosis, it is likely that the number of cases (1,667) is exaggerated.

### *Venereal Diseases*

(64) North Borneo is blessed with one of the lowest incidences of venereal infection in the world. Only nineteen cases of syphilis were diagnosed at all Government medical institutions during 1961. There were a mere 123 gonococcal infections, though this nearly doubled the previous year's total. Cases were almost wholly confined to port towns.

### *Endemic Goitre*

(65) Iodised salt in the form of licks continued to be distributed to all goitrous areas throughout the year. This solid form of the salt has proved satisfactory in that it keeps for a long time. Previously, salt crystals had been provided, but rapidly deteriorated in the damp climate. It is still too early to comment on the effects of the salt distribution, though Medical Officers report fewer cases of endemic goitre.

### *Quarantinable Diseases*

(66) No cases of smallpox, plague, cholera, yellow fever, louse-borne typhus or louse-borne relapsing fever occurred in North Borneo during 1961. Smallpox was reported from time to time in the Celebes from which islands a large number of immigrant labourers travel to the Tawau area each year. At this and other ports, strict control measures were continued, no immigrant being permitted to enter until vaccinated. During the year 21,492 vaccinations against smallpox were carried out.

### *Poliomyelitis and Encephalitis*

(67) Only two cases of clinical poliomyelitis were reported during the year. Whereas in 1960 there were two sharp outbreaks of Japanese B. encephalitis, only two cases were reported in 1961. 416 inoculations against poliomyelitis were given during the year.

### *Enteric Fever*

(68) Outbreaks of typhoid fever occurred in the Tawau area and near Keningau. In the former, there were twenty-five cases, nineteen of them on or near the Borneo Abaca Estate, whose medical service dealt with them. In the latter area, ten cases occurred at four kampongs. Counter measures included mass inoculation with T. A. B. vaccine given intradermally.

### *Other intestinal infections and infestations*

(69) Further results of the survey carried out during 1960 into the incidence of intestinal infestations were received from the United States Naval Medical Research Unit No. 2 based in Taiwan. The details were similar to those reported last year, and showed deplorably high incidences of hookworm, round-worm, and trichuris infestation. In addition, infestation with *E. histolytica* and *G. lamblia* were again high.

Dysentery, and other infections causing diarrhoea were again reported fairly frequently, the clinical disease usually being relatively mild. Doubtless viral as well as bacterial infection caused most of the cases. Although sanitary improvements were maintained in urban areas, there is virtually no satisfactory hygiene in the rural areas where the people still rely on unprotected wells, polluted rivers and streams as sources of water, and where the disposal of excreta and rubbish is



still primitive or non-existent. At hospitals and dispensaries, nearly ten per cent of all illnesses diagnosed were in this group of intestinal infections and infestations.

*Paracholera El Tor:*

(70) In July reports were received of an outbreak of paracholera in Sarawak, and later, both Hong Kong and Macao were affected by this disease. Large scale inoculation campaigns were therefore organised in North Borneo, and by the end of the year 177,000 persons had received immunisation. By then, news was received that the disease was occurring in the Philippine Republic and moving slowly southward in that country.

*Diphtheria; Whooping Cough and Measles:*

(71) Forty-three cases of diphtheria were recorded during the year; an increase of ten on the number of cases seen during 1960 which was the previous highest recorded. Commencing in July, large supplies of Triple Antigen were donated by UNICEF as part of a scheme whereby 20,000 immunisations could be given per annum. This work was carried out from the country's maternal and child health clinics, but unfortunately the very extensive anti-cholera inoculations, which proved necessary during the second half of the year, seriously hampered the campaign of inoculation against diphtheria, whooping cough and tetanus. In all some 4,500 children received triple antigen during the year but only 3,387 of them the full course of three doses. 442 cases of whooping cough, and 461 cases of measles were diagnosed at Government hospitals and dispensaries during the year as compared with 254 and 1,072 respectively during 1961.

*Influenza:*

(72) Records from medical institutions show 14,079 cases compared with 18,499 in 1960. There is naturally some doubt about the exact diagnosis of these cases, many of which were recorded from rural dispensaries run by hospital assistants. The year's infections were very mild, and there was no well defined epidemic.

*Trachoma; and other Ophthalmic Infection*

(73) Doubts have been expressed about the incidence of true trachoma in North Borneo, but with the expected arrival next year of an Ophthalmologist, expert investigation into this disease will be possible. During the year, 216 cases of this disease were recorded, compared with thirty in the previous year. It is not considered that these figures are reliable, and therefore they do not necessarily indicate any increase in the disease.

Simple ophthalmic infections continued to be very common. A total of 6,495 cases were recorded as against 5,095 in 1960. Treatment by chloromycetin eye ointment in capsules was continued at rural dispensaries. The average case required three and a half days treatment with this antibiotic before cure was declared.

The British Red Cross Society's Blind Welfare Subcommittee produced an excellent illustrated health education pamphlet on eye infection.

The work of this body is outlined later in this report.

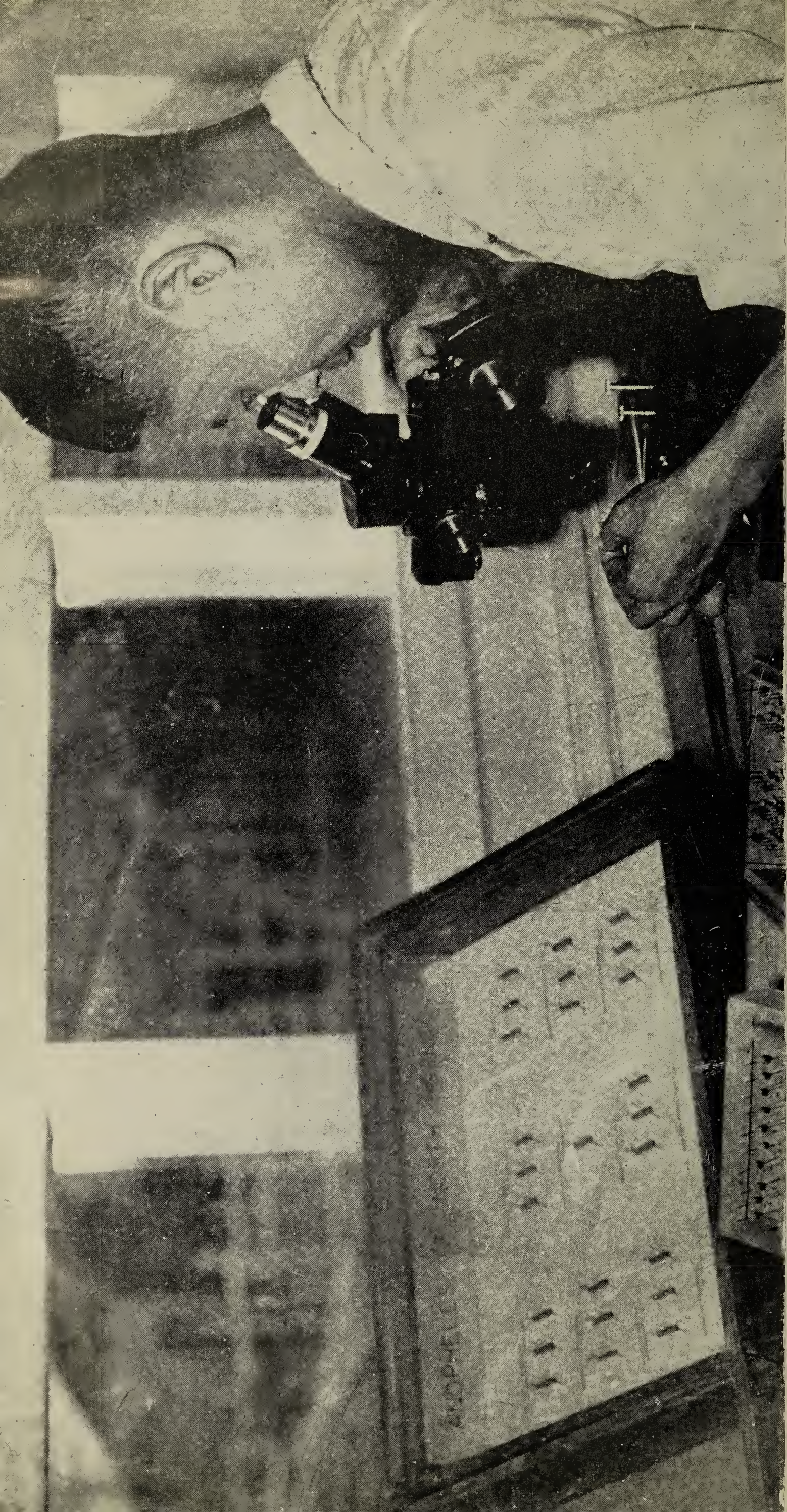




*(Broadcasting and Information Department).*

Mothers and Children outside Jesselton Health Centre.





(Broadcasting and Information Department).

Malaria Eradication — Entomologist at Work.



## SUBSECTION C: NUTRITION

(74) Cases of malnutrition are still observed, usually for the following reasons:—

An unexpected failure of crops resulting in persons being compelled to eat carbohydrate foods insufficiently supported by protein and vegetable foodstuffs; occasionally, the introduction of rice milling results in an isolated outbreak of beri-beri because of the overmilling of rice; immigrants travelling long distances by sea are frequently found on arrival to be in a gross state of malnutrition. Beri-Beri is not infrequently observed in women just prior to or after delivery and whilst breast feeding, suggesting a borderline state of aneurin insufficiency. There are still a few areas where tapioca or sago is the staple and in some of these, protein supplies are dependant on the vagaries of the hunt. The nutritional state in these locations is permanently somewhat deficient, though no cases of Kwashiorkor have been recorded in children.

(75) No accurate knowledge is available about the part which helminthic infestation plays in malnutrition, but it is probably considerable in areas where the diet itself is poorly balanced, and also doubtless makes some contribution to the incidence of anaemia. Hypochromic anaemia is common especially in women and is almost certainly due to a low iron intake and/or absorption. Further investigation is required.

(76) Ignorance contributes to malnutrition, as many of the population do not take advantage of certain vegetables and fruits which are comparatively readily available. Efforts are being made to improve knowledge of these food items and to encourage their use.

## SUBSECTION D: ENVIRONMENTAL SANITATION

(77) There has been further gradual improvement in the sanitation of urban areas, but little change in rural areas, where conditions remain at best, very primitive, and often non-existent.

(78) No new piped water supplies were provided, but the quantity was increased at Sandakan and Labuan by development of more boreholes, and laying of more pipes. No new sewerage schemes were installed, though the number of septic tanks constructed in urban areas again increased substantially, replacing pit latrines. In rural areas a few new public pit latrines were erected, but the number of private ones remains very small outside the urban areas and their immediate environs. Where kampongs are built over the sea, the tide is a reasonably satisfactory disposer of night soil. So, too, are the rivers, but they are also used as water supplies. Refuse disposal is arranged by local authorities at the majority of towns; partial controlled tipping being practised at the dumps. These authorities also control slaughter houses, but there is still room for much improvement in the sanitary arrangements of these.

(79) Proposals were considered in October for the fluoridisation of water supplies, and tests of existing fluoride levels were arranged by the Public Works Department at the end of the year.



(80) On 1st January, 1961 the Public Health Ordinance, 1960 became effective together with various Regulations made under it in connection with malaria control, food and drugs and milk and dairies. Area Medical Officers were appointed as health officers to various local authorities, and during the year these authorities formed health committees.

Administration of the Ordinance and its Regulations has so far presented few difficulties, and very few prosecutions have been necessary. There is no doubt that the local authority health committees have a most important part to play in much needed sanitary improvements of towns and kampongs. Inspections under the Ordinance were carried out mainly by the country's small health inspectorate of fourteen men. They were posted to the major towns of Jesselton, Sandakan, Tawau, Kudat, Labuan, Keningau and Beaufort, but toured to other places within their respective medical areas. Village health inspectors carried out work of a more simple nature at a number of rural areas.

(81) The scope of work carried out by the health section of the Department under the control of a Chief Inspector is very varied. Apart from routine duties in connection with the Ordinance, the section is concerned at ports with inspection of aircraft, ships and small boats, under the International Sanitary Regulations. Reports of infectious diseases are investigated, and the health staff automatically take part in control or preventive measures, such as vaccination and, in 1961, anti-cholera inoculation campaigns. Assistance is also given to the work of other branches of the department, notably the maternal and child health service and the malaria eradication programme. At Jesselton, health inspectors also take part in the analysis, and preparation for analysis, of all the Department's morbidity returns, and returns of vital statistics.

(82) Routine work carried out by the health inspectorate during 1961 included the following:—

#### *Inspections*

Foodshops	...	...	...	1,236
Factories	...	...	...	92
Aircraft	...	...	...	287
Ocean going ships	...	...	...	539
Kumpits	...	...	...	7,112
Buildings for occupation	...	...	...	517
Nuisances	...	...	...	1,634
Markets	...	...	...	218
Slaughter places	...	...	...	141

#### *Other procedures*

Investigations of infectious diseases	...	24
Disinfections	...	104
Supervision of exhumations	...	9

The best progress has been made in the field of food hygiene where, as a result of very detailed inspections, with much time spent on advice and follow up, real improvements are now occurring.



## SUBSECTION E: PERSONAL HEALTH SERVICES

*Maternal and Child Health Services*

(83) At the end of the year, three health sisters were engaged full time, and two nursing sisters with the health visitors certificate part-time, on maternal and child health work. These officers served as supervisory health visitors to various areas. They were supplemented by seven nurses/midwives who have had some training, in-service or otherwise, in public health nursing; three registered midwives; six nurses/midwives (part-time on health work); two assistant nurses, and thirty-two rural health nurses. The last named receive two years training, including one year's hospital midwifery and work in the children's wards; and a further year partly at the health centre in Jesselton and partly in a rural district.

(84) This staff were successfully operating fifty-eight maternal and child health clinics at the end of 1961, an increase of ten on the previous year. Clinics are held at hospitals, health centres, dispensaries; small buildings specifically provided; and at a few places where there is no satisfactory public building, in the native chief or orang tua's house. During the year a new district maternal and child health centre with general health office attached was built at Keningau, and another commenced at Labuan. Clinics are widely distributed over most of the West Coast Residency, the Interior Residency and Labuan Island; but so far, development in the two east coast residencies has been limited, and only nine Government clinics were operating there by the close of the year. The organisation of work is based on Medical Areas from a main MCH Centre in charge of a supervisory health visitor. Each main centre controls a number of rural clinics. The Jesselton Centre delegates to several district centres each in charge of a nurse who is responsible for a number of rural clinics. Both Government and Local Authorities now employ rural health nurses; but all work under the general organization controlled by the supervisory visitor. In addition to thirty-two rural health nurses in service, a further eighteen were in training at the end of the year.

(85) Sixty-nine traditional midwives have received short training courses in Government hospitals over the past five or six years, but so far there is little effective liaison between them and the services provided officially. More recently, however, several much younger women have shown an interest in the simple training given, and every effort is to be made to encourage this hopeful trend. A younger and more enlightened "kampong bidan" could be a valuable assistant to the better trained rural health nurse provided by authority.

*UNICEF Support*

(86) The United Nations Children's Fund, advised by the World Health Organization, have given valuable aid to North Borneo's Maternal and Child Health programmes for a number of years in the form of drug and diet supplements, skim and whole milk. During 1961 the aid was generously increased by the provision of five landrovers, three outboard motors, two dozen sets of clinic equipment and a large quantity of triple antigen.



*Record of Work done during 1961 compared with 1960*

(87) Returns for 1961 broke all previous records.

*Ante Natal Clinics, Domiciliary Midwifery Maternal Health*

	1961	1960
Attendances, Ante Natal Clinics ... ..	31,803	27,554
Home deliveries supervised ... ..	1,916	1,548
Post natal domiciliary visits ... ..	8,952	6,949
Ante natal domiciliary visits ... ..	3,126	2,914
Attendances of mothers at MCH Clinics ...	100,969	30,473
Health Education Sessions ... ..	611	729
Attendances at health education sessions ...	22,086	20,472
Family Planning Attendances ... ..	268	139

*Infant and Child Welfare*

Attendances at Clinics ... ..	105,322	80,725
Home visits ... ..	7,197	4,243
Triple Antigen (completed) ... ..	3,387	898

*School Medical Service*

(88) There are now 378 schools and 56,054 pupils in North Borneo, but the demands on Medical Officers are too great to enable any system of routine medical examination of school-children. A number of young primary school-children benefit from the dental nurses' clinics at Jesselton and Sandakan, but by far the greatest volume of health work done at schools was in connection with control of tuberculosis, outlined in the report on that scheme. The Education Department has given increased attention to the teaching of hygiene at schools, and during 1961, a senior doctor of the Medical Department was nominated a member of the Syllabus Committee, and chairman of the Sub-committee for the teaching of hygiene.

## SUBSECTION F: HEALTH EDUCATION

(89) The Medical Department has no specific health education branch, but the subject is dealt with as a routine by those engaged in maternal and child health work. In addition, the Malaria Eradication Programme arranges education about the campaign both at national and local levels. Occasional health broadcasts were again made in various languages by arrangement between the Medical Department and the Department of Broadcasting and Information. The formation during 1961 of local authority health committees has provided a useful forum of discussion on various aspects of health with leaders of the community. Two voluntary organisations, the British Red Cross Society and the North Borneo Anti Tuberculosis Association were again active in the field of health education during the year.

## SECTION VII: MEDICAL INSTITUTIONS

## SUBSECTION A: HOSPITALS AND DISPENSARIES

(90) There are two major hospitals, at Jesselton and Sandakan, six cottage hospitals at Tawau, Kudat, Keningau, Beaufort, Labuan, and Tenom and thirty-two dispensaries of which nineteen have beds. Some of the last named are virtually small hospitals dealing with substantial numbers of in-patients in well equipped wards. The six cottage hospitals



named above all have fifty beds or over. In previous annual reports the institution at Tenom was not rated as a cottage hospital, but since it has fifty-nine beds, it is now deemed more appropriate so to name it.

In addition to the above; one railway, and one motor road travelling dispensary operate from Jesselton. Mobile units also operate from two cottage hospitals (Tawau and Kudat) and from ten dispensaries, the means of transport including landrovers (three units); small river boats (three units) and also foot-slogging with loads carried by porters.

(91) During the year work has started on construction of a new cottage hospital at Lahad Datu (fifty beds); and plans were advanced for a new major hospital at Tawau to replace the old and now inadequate cottage hospital there. Preliminary plans were also prepared for a new modern out-patient department at the Queen Elizabeth Hospital, Jesselton, as a result of which, existing space in that institution will be available for enlarging the Dental Centre, the Ophthalmic Department, and Nurses Training School. Minor improvements were made at hospitals during the year.

(92) A new dispensary was nearly completed at Penangah and operated by the staff of the old dispensary at Kuala Tongod, twenty-five miles further east on the Kinabatangan river. The latter was then run by a health visitor of the Anglican Mission which has a station there. A new dispensary was opened in an existing building at Sindumin (Sipitang district). It was run by staff withdrawn from another; Mempakul opposite Labuan Island, which was closed because of very poor support. An existing building was converted into a dispensary at Kiulu (Tuaran district), but shortage of staff prevented its being put into operation. Various structural improvements were carried out at a number of existing dispensaries.

#### *Number and Distribution of beds at hospitals*

(93) The distribution of beds at the two major and six cottage hospitals is as follows:—

<i>Hospitals</i>	<i>General</i>	<i>T.B.</i>	<i>Obstetric</i>	<i>Infectious</i>	<i>Mental</i>	<i>Remarks</i>
Queen Elizabeth Hospital						
Jesselton .. ..	147	140	30	18	4	Infectious beds at present in future Ophthalmic wards
Duchess of Kent Hospital						
Sandakan .. ..	101	69	8	6	—	
Labuan .. ..	45	28	4	—	2	
Tawau .. ..	52	32	14	—	2	
Beaufort .. ..	31	39	4	—	1	
Keningau .. ..	49	42	9	—	2	
Tenom .. ..	24	31	4	—	—	
Kudat .. ..	39	28	4	—	2	
	488	409	77	24	13	Total 1,011



*Total Beds North Borneo Medical Services*

Hospitals	...	...	...	1,011
Mental Hospital	...	...	...	160
Dispensaries	...	...	...	198
TOTAL				1,369

(94) The beds at dispensaries are generally for lighter cases, and chronic cases, the more severe cases being referred to a hospital. However, a few dispensaries are very remote and therefore the hospital assistant in charge necessarily has a great responsibility. Including the beds at dispensaries, but excluding those at the Mental Hospital, the Government provides a total of 1,189 beds, or one bed per 400 of the population.

(95) Appendix 3 outlines total annual returns over the past five years for all Government medical curative institutions. In-patient returns from the hospitals are given separately below:—

<i>Hospital</i>	IN-PATIENTS				
	1957	1958	1959	1960	1961
Queen Elizabeth, Jesselton ...	3,658	4,681	4,872	5,528	6,048
Duchess of Kent, Sandakan ...	1,912	2,051	2,600	2,950	2,904
Tawau ...	1,704	1,635	1,608	1,735	2,158
Kudat ...	1,040	920	1,260	1,663	1,563
Labuan ...	535	790	884	928	962
Beaufort ...	1,008	921	1,167	1,316	1,381
Keningau ...	826	881	1,215	1,312	1,040
Tenom ...	—	—	664	744	755
	10,683	11,879	14,270	16,176	16,831

(96) The total number of out-patients seen at these hospitals again rose, and returns at six of them have increased by between fifty and one hundred and fifty per cent over the past five years. During 1961, 113,545 new out-patients were seen compared with 66,345 five years ago.

*Queen Elizabeth Hospital, Jesselton*

(97) This hospital serves Jesselton and the whole West Coast Residency other than Kudat district and part of Papar district, and is also the whole country's "specialist" hospital for major surgery and laboratory techniques. Its service to Jesselton town and rural district (about 52,000 people) is direct. Its service to Ranau, Kota Belud and Tuaran district (total population about 80,000) is indirect, through a total of five rural dispensaries.

(98) The senior professional staff consisted of:—

- 1 Medical Officer-in-Charge the hospital and area
- 1 Specialist Surgeon
- 2 Medical Officers



- 1 Matron
- 5 Nursing Sisters
- 1 Sister Tutor
- 2 Senior Staff Hospital Assistants.
- 1 Senior Staff Nurse.

With a total nursing staff (including pupil nurses and assistant nurses) of 100, it is by far the best staffed hospital in North Borneo at one nurse per 3.4 beds.

(99) During the year a total of 571 major and 1,517 minor operations were performed in this hospital. There were 20,279 new out-patients. Regular ante and post natal, surgical, and chest clinics were held throughout the year. There is no casualty department, but the need for this is now acute. It has therefore been included in the plans for the new out-patients department.

#### *Duchess of Kent Hospital, Sandakan*

(100) This hospital serves Sandakan town and immediate rural area (population about 35,000) and, indirectly, the remainder of the Sandakan Residency (population about 40,000) through three rural dispensaries, and various mission and estate dispensaries. Communications are, however, poor from some of the latter, usually involving river and marine journeys of several days.

(101) The senior professional staff during the year consisted of:—

- 1 Medical Officer-in-Charge the hospital and area
- 1 Medical Officer
- 1 Senior Sister
- 2 Nursing Sisters
- 2 Senior Staff Hospital Assistants
- 1 Senior Staff Nurse

(102) In 1961 a total of eighty-two major and 698 minor operations were performed. There were 14,314 new out-patients. Ante and post natal, and chest clinics were held throughout the year. There is a need for a surgeon at this hospital which receives more than its normal share of accident cases consequent on the timber industry being prominent in the area.

#### *Other Hospitals*

(103) The six cottage hospitals serve one or more districts with populations varying from 20,000 to 78,000. Five are at present staffed by one doctor. The other one, Tenom, is in resident charge of a chief hospital assistant. It is visited weekly, and in emergency, by the doctor in charge at Keningau. Medical Officers when touring the dispensaries leave their area hospital in the charge of a nursing sister (at three hospitals) or a senior hospital assistant. At Tawau and Beaufort the Estate Medical Officers, have again kindly stood by for emergency in the absence on tour of the Medical Officer. Increasing hospital clinical duties, including review and follow up in connection with the Tuberculosis Control Scheme are making it more difficult for Medical Officers to tour their areas.



(104) During 1961 a total of 130 major and 1,458 minor operations were performed at the cottage hospitals. Out-patient returns for 1961 were as follows:—

<i>Hospital</i>					<i>New Out-patients</i>
Tawau	...	...	...	...	16,242
Kudat	...	...	...	...	11,932
Labuan	...	...	...	...	7,466
Keningau	...	...	...	...	15,041
Tenom	...	...	...	...	11,082
Beaufort	...	...	...	...	17,199
					<hr/> 78,952 <hr/>

Tawau hospital continued to deal with a large number of Indonesian immigrants seeking work on Estates, arranging examination, including chest X-ray, for all of them.

*Work of Dispensaries 1961*

(105) The work of static dispensaries named below under each Medical Area, is summarised as follows:—

<i>Jesselton Medical Area</i>			<i>No. of restbeds</i>	<i>New Out-patients</i>	<i>Admissions</i>
Kota Belud	...	...	29	10,059	1,219
Tuaran	...	...	—	11,912	—
Tenghilan	...	...	—	4,444	—
Ranau	...	...	12	15,739	488
Bundu Tuhan	...	...	6	8,393	217
Police Dispensary, Kapayan			18	5,210	100
Prison Dispensary, Kapayan			—	1,759	—
Railway Dispensary, Kapayan			—	569	—
<i>Kudat Medical Area</i>					
Sequati	...	...	4	2,940	73
Pitas	...	...	—	2,893	—
Bandau	...	...	4	7,790	16
Tandik	...	...	4	9,399	47
<i>Beaufort Medical Area</i>					
Papar	...	...	18	20,490	1,044
Kuala Penyu	...	...	6	4,558	249
<i>Labuan Medical Area</i>					
Sipitang	...	...	8	7,937	211
Sindumin	...	...	—	2,318	—
Menumbok	...	...	—	2,049	—
Mempakul	...	...	—	108	—
<i>Keningau Medical Area</i>					
Tambunan	...	...	22	7,100	573
Pensiangan	...	...	12	4,313	68
Sepulot	...	...	6	4,266	85



			<i>No. of restbeds</i>	<i>New Out-patients</i>	<i>Admissions</i>
Tulid	...	...	6	1,712	38
Kemabong	...	...	—	2,344	—
Apin Apin	...	...	—	2,370	—
Bingkor	...	...	—	2,743	—
Dalit	...	...	—	1,708	—
<i>Sandakan Medical Area</i>					
Beluran	...	...	6	13,460	228
Lamag	...	...	2	1,250	8
Penangah	...	...	—	3,398	—
K. Tongod	...	...	4	658	12
<i>Tawau Medical Area</i>					
Lahad Datu	...	...	19	7,769	513
Semporna	...	...	12	4,393	217
			198	176,051	5,406

*Notes*

1. *Sequati* ... Operated by Mission Nurse.
2. *Pitas* ... Operated by Estate Dresser.
3. *Mempakul* ... Closed February, 1961.
4. *K. Tongod* ... Operated by Mission Health Visitor.

(106) The number of patients exceeded previous records. In addition to the figures given above, a total of 6,128 minor operations were performed at these institutions.

(107) Returns for the two travelling dispensaries based on Jesselton were as follows:—

Railway travelling dispensary New Cases	...	11,470
Motor Road travelling dispensary New Cases	...	20,508
		31,978

In addition the twelve units operating from hospitals (2) and dispensaries saw a total of 48,688 new cases which are included in the returns for hospitals and dispensaries given in the preceding paragraphs.

(108) The medical staff operating the dispensaries described above were as follows:—

- 4 Senior Hospital Assistants
- 32 Hospital Assistants
- 3 Staff Nurses
- 1 Mission Health Visitor
- 1 Mission Nurse
- 1 Estate Dresser
- 1 Assistant Nurse
- 9 Village Health Inspectors.



### *Ambulance Services*

(109) Seven ambulances were run by the Medical Department during 1961 and are listed below:—

<i>Hospital</i>	<i>Number</i>
Queen Elizabeth, Jesselton ... ..	2
Duchess of Kent, Sandakan ... ..	1
Tawau ... ..	1
Kudat ... ..	1
Labuan ... ..	1
Keningau ... ..	1

Other ambulances were operated by the St. John's Ambulance Brigade who kindly assisted the Department when necessary.

### SUBSECTION B: SPECIAL HOSPITALS

#### *Buli Sim Sim Mental Hospital, Sandakan*

(110) The number of patients in this 160 bed hospital on 31st December, 1961 was 152. During the year there were 121 admissions and 90 discharges. Six patients died. The 121 admissions during the year were classified as follows:—

Schizophrenia ... ..	41
Affective Psychoses ... ..	34
Toxic and Nutritional Psychoses ... ..	16
Organic dementia ... ..	13
Neuroses ... ..	9
Mental deficiency ... ..	4
Psychopath ... ..	1
Other ... ..	3
	<hr/>
	121
	<hr/>

During 1961, 203 patients received chemotherapy and 159, electro-convulsive therapy.

(111) The senior staff of the hospital consisted of the following:—

Medical Officer Sandakan: visiting. Registered Male  
Mental Nurse (Superintendent) Senior Staff Hospital Assistant,  
Senior Staff Nurse.

(112) Occupational therapy remained a major factor in treatment. Female patients worked at laundering, sewing, and gardening, whilst male patients were engaged in grass cutting, kitchen work and the cutting of firewood. As a new venture, several male patients went out to work for a building contractor, for a personal wage. It is hoped to extend this practice next year.

Recreation included a fortnightly sound film show, football and volleyball for the men. Sea bathing was also enjoyed by both sexes.

There was no outbreak of any epidemic disease. A tuberculosis survey of the patients revealed two cases of the disease; both have improved under treatment.



(113) A sum of \$28,000 was provided for improvements to the hospital, this being over and above the normal allocation for building maintenance. The work, which included extension of the compound was still in progress at the end of the year. A new mental hospital is to be built at Jesselton during the present Development Plan (1959—64). This will replace the Buli Sim Sim hospital.

#### SUBSECTION C: SPECIALISED SERVICES

##### *Dental Services*

(114) At the end of 1961 the staff of the Dental Section consisted of two Dental Officers, one dental assistant (a senior hospital assistant), one dental mechanic, three school dental nurses, four receptionists and one clerk. Both Dental Officers proceeded on short leave during the year.

Permanent clinics were maintained at the Queen Elizabeth Hospital, Jesselton, and at the Duchess of Kent Hospital, Sandakan. Visits were made to Tawau, Labuan, Keningau and Tenom by the Dental Officers where, as usual, they were overwhelmed with demand. The three school dental nurses operated a two-chair clinic at Jesselton Health Centre and a one-chair clinic at Sandakan Health Centre.

Early in the year the Dental Officer at Sandakan moved into the new modern clinic at the hospital having previously worked at the health centre. During the year two high speed air turbine machines were installed at each permanent clinic, and the consequent ease and rapidity of conserving teeth under this process is reflected in the returns.

(115) The School Dental Service continued satisfactorily, but co-operation with schools in the Jesselton area is not what it should be. It is hoped that visits by the dental nurses to headmasters, with demonstrations and explanations of their work, will help to secure better support. The Sandakan School Clinic continued to receive maximum support and the nurse there was constantly busy.

##### *Returns of Work 1961 (1960 compared)*

##### *(116) General Dental Service: Jesselton and Sandakan Clinical*

	1961	1960
Attendances ... ..	10,666	6,834
Number of teeth restored ...	2,983	2,406
Number of temporary teeth extracted ... ..	5,045	4,211
Number of permanent teeth extracted ... ..	7,062	4,162
Other Operations including temporary fillings, Ortho- dontic appliances, splints and surgical cases ...	6,108	4,693
Number of general anaesthetics ... ..	627	460
Number of X-rays taken ...	222	148



*Laboratory*

Number of full dentures ...	107	84
Number of partial dentures	61	56
Repairs to dentures ...	20	41
Inlays and other metal castings ...	8	30
Appliances and Splints ...	12	4

(117) *School Dental Service* (1960 compared)  
*Sandakan* (Single chair clinic)

	1961	1960
Fillings ...	932	829
Extractions ...	3,412	2,017
Cleanings ...	225	345
Examinations ...	222	361
Completions ...	157	351
Attendances ...	2,988	2,021
<i>Jesselton</i> (two chair clinic)		
Fillings ...	1,594	1,700
Extractions ...	1,087	813
Cleanings ...	648	594
Examinations ...	664	390
Completions ...	590	314
Attendances ...	1,969	1,670

*Surgical Services*

(118) There was one Surgical Specialist on the establishment during the year at the Queen Elizabeth Hospital, Jesselton. In addition, one Medical Officer having an FRCS was recruited during the year. Elsewhere emergency surgery and other operations are done by the Medical Officers in charge areas.

(119) The total number of operations performed during 1961 at all Government Medical Institutions was 9,801 of which 783 were major and 9,028 minor. This exceeds the total performed last year by 3,560.

(120) *Operations performed at the Queen Elizabeth Hospital are classified as follows:—*

*Major Operations*

Abdominal ...	209
Breast ...	19
Neck ...	20
Uro-genital ...	51
Orthopaedic ...	24
Caesarian Section ...	37
Thoracic ...	5
Ear, Nose and throat ...	48
Plastic ...	26
Craniotomy ...	3
Herniotomy ...	25
Ano-Rectal ...	30
Tracheotomy ...	30
Ophthalmic ...	8
Congenital conditions ...	16



<i>Minor Operations</i>	...	...	...	1,517
-------------------------	-----	-----	-----	-------

Includes fractures, dislocations, circumcisions D & C, Dental and Labour procedures

Total Operations	...			<u>2,088</u>
------------------	-----	--	--	--------------

### *Obsterical Services*

(121) There is no special obstetrical service at hospitals, though they are equipped with labour and maternity wards; and trained nurses working in them are also midwives. During the year, 3,105 normal deliveries, and 1,090 abnormal conditions (before, during and following labour) were dealt with at the hospitals. In addition 2,655 new ante natal cases were seen at these institutions.

### *Physiotherapy*

(122) A chartered physiotherapist was engaged part time at the Queen Elizabeth Hospital throughout the year.

### *Laboratory Services*

(123) The Queen Elizabeth Hospital Jesselton houses the Department's major laboratory, and the only one at which serological, and a limited number of bacteriological, and biochemical techniques are performed. Other hospital have simple laboratories at which relatively minor techniques only are carried out. Towards the end of the year a Special Grade Laboratory Technician returned from Australia where he had gained an honours B.Sc. in Bacteriology and took over charge of the Jesselton Laboratory. An extension of bacteriological work will therefore be possible. The other laboratory staff included one senior technician and seven technicians. In addition, seven hospital assistants perform a varying amount of minor laboratory work at hospitals.

Laboratory work specific to the malaria eradication and tuberculosis control project is done by malaria technicians (9) and microscopists (7) and by tuberculosis control technicians (4).

(124) The total number of laboratory procedures carried out in the eight hospitals during 1961 was 76,409.

A summary of the work done in the Queen Elizabeth Hospital Laboratory is given below:—

Haematology	...	...	...	12,237
Serology	...	...	...	1,186
Biochemistry	...	...	...	1,012
Bacteriology	...	...	...	326
Parasitology	...	...	...	2,655
Urinalysis	...	...	...	16,983
ABO Grouping	...	...	...	2,263
Crossmatching	...	...	...	1,084
Miscellaneous	...	...	...	201



*X-Ray Services*

(125) X-ray departments are attached to the two major hospitals at Jesselton and Sandakan, and also to the cottage hospitals at Tawau, Labuan, Kudat, Keningau, Teñom, Beaufort and the dispensary at Papar. In addition Odelca camera units for mass miniature radiography under the T.B. Control Project are established at Jesselton, Sandakan, and Tawau, with a further machine for mobile work.

General X-Ray work is done by nine hospital assistants who have received additional training in it, and tuberculosis control technicians, trained by a Colombo Plan expert, operate the Odelca machines.

All machines are serviced by an X-Ray engineer of the General Electric Corporation who makes quarterly visits from Singapore.

(126) Towards the end of the year a personal and general monitoring system was commenced which demonstrated that none of the staff have received excessive doses of radiation.

This was very kindly arranged by the Director of the Dominion X-Ray and Radium Laboratory Christchurch, New Zealand.

(127) Work done in the various X-Ray departments is shown below (excluding T.B. control mass miniature radiography already noted in the section on that scheme)

				<i>No. of patients X-rayed</i>
Queen Elizabeth Hospital, Jesselton				6,355
Duchess of Kent Hospital,				
Sandakan	...	...	...	5,989
Tawau Hospital	...	...	...	16,721 (includes Immigrants)
Labuan Hospital	...	...	...	1,686
Keningau Hospital	...	...	...	1,317
Beaufort Hospital	...	...	...	1,552
Kudat Hospital	...	...	...	999
Tenom Hospital	...	...	...	890
Papar Dispensary	...	...	...	1,105
Total				36,614

Returns from the Queen Elizabeth Hospital, Jesselton, given below indicate the scope of work done

<i>Nature of Film</i>				<i>No. of Examination</i>
Bone	...	...	...	1,795
Chest	...	...	...	3,873
Gall-bladder	...	...	...	46
Genito-urinary	...	...	...	105
Gastro-intestinal	...	...	...	124
Abdomen (direct)	...	...	...	132
Obstetrical	...	...	...	82
Sinuses	...	...	...	62
Unspecified	...	...	...	136
				6,355
Exposures				8,648



## SECTION VIII: NON-GOVERNMENT MEDICAL SERVICES

### MEDICAL SERVICES PROVIDED BY ESTATES AND COMPANIES

(128) Two hospitals, one modern urban clinic, and 49 dispensaries, some of them with rest-beds, were maintained by Estates and Companies under the Labour Ordinance for the medical care of employees and their families totalling about 45,000 persons during the year.

(129) Staff employed included five registered medical practitioners as follows:—

- 1 — Borneo Abaca Ltd. Colonial Development Corporation  
Tawau area. Service based on a hospital of 73 beds.
- 1 — Segama Estate. Lahad Datu area. Service based on a  
hospital. 70 beds.
- 2 — Sandakan Medical Group.
- 1 — Beaufort Medical Group.

The term 'Medical Group' means a group of companies who have jointly provided a Medical Officer and Medical Services.

Towards the end of the year various companies in the Tawau area were considering the formation of a new group, including employment of a Medical Officer.

Other companies retained the services of private practitioners to attend to the medical needs of their employees.

A total of two nursing sisters, and 53 nurses, hospital assistants or dressers were employed by estates and companies during the year.

(130) Cooperation both ways between Estate and Government Medical Services, both in curative and public health services (including the national programmes against malaria and tuberculosis) has been maintained; which works to the benefit of both parties. Examinations for Dresser's Licences under the Dressers Licensing Ordinance were held in December. These were conducted locally, the examiners at each centre being Government and Estate doctors. The examination papers were set at Medical Headquarters, Jesselton, where the papers received a third reading, to ensure uniformity of standard.

(131) Estate and company services send in copies of their returns of work each month to Medical Department Headquarters, Jesselton. During 1961, a total of 2,549 in-patients and 77,662 out-patients were seen at the various institutions operated by them. In addition, the services deal with improvements in the hygiene of camps, work places and labour lines, including measures to reduce hazards from mechanical and other working equipment. Two services operate maternal and child health clinics.

### MEDICAL SERVICES PROVIDED BY MISSIONS

(132) The Roman Catholic Mission continued to operate out-patient clinics and maternity homes services at Penampang near Jesselton, and also at Toboh near Tambunan in the Interior Residency. The Anglican Mission has an established station at Tongod in the Kinabatangan where there is a dispensary with sick resthouse, and a small maternity home in charge of an expatriate health visitor. The same Mission opened another



station at Sapi near Beluran on the Labuk river in Sandakan Residency, from where a third small dispensary is operated at Telupid; also in Sandakan Residency.

The Basel Mission again provided an expatriate nurse to work at the dispensary and small maternity home in Sequati near Kudat. The dispensary building is provided by the British Red Cross Society and the Government Medical Department supplies drugs. The Borneo Evangelical Mission operates a dispensary at Meligan in the Sipitang district. This Mission also run their own aircraft.

## SECTION IX: VOLUNTARY ORGANISATIONS AND SOCIAL WELFARE

(133) The Social Welfare Council is established through the Department of Labour and Welfare. Its activities include the provision of grants to such organisations as the North Borneo Branch of the British Red Cross Society; the St. John's Ambulance Association; the North Borneo Anti-tuberculosis Association; the Leper Welfare Relief Fund; and the three Old Peoples' Homes at Jesselton, Sandakan and Tawau.

(134) The medical work of the local branch of the British Red Cross Society includes payment for the fitting and supply of artificial limbs in Malaya to those who cannot afford them; help for the blind; health talks and films; and financial assistance to paupers requiring special treatment in Singapore or elsewhere overseas. The Society also assisted the Medical Department in Jesselton and Kudat by running a blood donor panel, including the recruiting of donors and arranging their transport when needed.

(135) During the year the Society's *Blind Welfare Sub-Committee* developed plans for a Rural Blind Training Centre at Tuaran. This project is financed jointly by the Society; the Jesselton Rotary Club, and the Social Welfare Council. The Agricultural Department has given advice and practical aid on farm training aspects. The Blind Welfare Sub-Committee have recruited a local man for training in Malaya as an instructor, whose salary is met by the Royal Commonwealth Society for the Blind. In 1961, nine blind persons were trained at handicraft and two others were maintained at an institution in Singapore. The Sub-Committee produced an excellent illustrated pamphlet on prevention of blindness.

(136) The St. John's Ambulance Association's medical work has expanded in the fields of ambulance services and first aid. During the year more courses were given by the Association in first aid and lay teachers were also trained.

(137) The welfare of tuberculosis patients has again been ably managed throughout the country by *NOBATA (the North Borneo Anti-Tuberculosis Association)*. The association has rest-houses at some main centres which are available for the temporary accommodation for patients from more remote parts, who require to continue out-patient treatment. The Association gave valuable assistance to the Medical Department in contact tracing; home visits, and relief to tuberculosis sufferers and their dependants, both in and out of hospital. Helpful





Anticholera Inoculations at a Kampong.

(Broadcasting and Information Department).







publicity about the anti-tuberculosis programme was also arranged and the Association provided funds for the transport of patients from out-lying places when they were due for review.

### SECTION X: VISITORS 1961

(138) Sir Harry Wunderly — WHO and Colombo Plan Adviser on Tuberculosis.

Miss F. Udell, D.B.E. — Chief Nursing Adviser to the Secretary of State.

Dr. M. Postiglione — Regional Malaria Adviser WHO, WPRO, Manila.

Professor C. Y. Chow — Regional Entomologist WHO, WPRO, Manila.

Mr. P. S. Echavez — Regional Sanitary Engineer (Malaria) WHO, WPRO, Manila.

Dr. W. W. Yung — Director, WHO Epidemiological Intelligence Station, Singapore and WHO Area Representative.

Mr. S. Polak — Resident, Representative, UNICEF, Thai Area Mission, Bangkok.

Mr. W. C. Turner, D.F.C. M.P.

Mr. F. Byron — Crown Agents, Senior Engineer.

Mr. M. L. Petitjean — Administrative Officer, WHO, WPRO, Manila.

Mr. J. Arbuthnot — WHO Regional Sanitary Engineer, WPRO, Manila.

Mr. R. N. Clark — Chief Sanitary Engineer, WHO, Geneva.

Mr. Vaidanathan — Deputy Regional Representative United Nations Technical Assistance Board.

Mr. H. L. Spence Jr. — Regional Representative United Nations, Technical Assistance Board.

Mr. G. A. Jackel — Australian Commissioner, Singapore.

Dr. R. Garrett-Jones — Entomologist, Division of Malaria Eradication, WHO, Geneva.



## APPENDIX 1

## STAFF OF MEDICAL SERVICES

## A. 1961 Government Medical Department Staff:

Designation	Establishment	Actual	Remarks
<b>Headquarters:</b>			
Director ... ..	1	1	
Deputy Director ... ..	1	1	
Principal Matron ... ..	1	1	
Accountant-Storekeeper ... ..	1	1	
<b>Hospital and Dispensary: Services:</b>			
Surgical Specialist ... ..	1	1	
Medical Officers ... ..	15	12	
Matron ... ..	1	1	
Mental Nurse (Male) ... ..	1	1	
Senior Sister ... ..	1	1	
Sister Tutor ... ..	1	1	
Nursing Sisters ... ..	9	9	
Chief Hospital Assistants ... ..	3	3	
Senior Staff Hospital and Senior Staff Nurses	50	50	
Staff Hospital Assistants			
Staff Nurses			
Trained and Probationer Hospital Assistants and Nurses	181	177	
Assistant Nurses ... ..	40	44	
Village Health Inspectors ... ..	10	10	Dressers Part-time
Hospital Secretaries ... ..	2	2	
Dietician ... ..	1	1	
Housekeepers ... ..	2	2	
Attendants and Servants ... ..	76	76	
Unestablished Attendants and Servants ... ..	—	187	
Boatmen ... ..	3	3	
<b>Laboratory Services:</b>			
Special Grade Technician ... ..	—	1	Super-numerary
Senior Technician ... ..	1	1	
Technician ... ..	8	7	
<b>Dental</b>			
Dental Officer ... ..	2	2	
Dental Technician ... ..	1	1	A Senior Staff Hospital Assistant
Dental Mechanic ... ..	1	1	
Dental Nurses ... ..	4	3	
Dental Receptionists ... ..	4	4	
<b>Maternal and Child Health Services:</b>			
Health Sisters ... ..	3	3	
Rural Health Nurses and Probationer Rural Health Nurses ... ..	41	41	
<b>Note</b>			
In addition 15 nursing personnel and 3 midwives included under Hospital and Dispensary Services above worked whole or part-time in Maternal and Child Health Services—also local authority rural health nurses.			
<b>Environmental Hygiene Services:</b>			
Chief Health Inspector ... ..	1	1	At head-quarters
Senior Health Inspector ... ..	2	2	
Health Inspectors and Trainee Health Inspectors ... ..	12	12	
Village Health Inspectors ... ..	11	11	10 are part-time dressers
Ratcatchers ... ..	3	3	
Vaccinator ... ..	1	1	
Mandors ... ..	4	4	



## APPENDIX 1 — (cont.)

Designation				Establishment	Actual	Remarks
<b>Malaria Eradication:</b>						
Malariologist (Medical Officer)	...	...	...	1	1	
Technician/Clerk	...	...	...	1	1	Head of the Administrative Section under eradication programme. One is head of spraying section under eradication programme. Includes Senior and Sector Leader technicians under eradication programme.
Malaria Control Technicians	...	...	...	3	3	
Malaria Technicians	...	...	...	66	66	
Assistant Malaria Technician	...	...	...	68	68	
Mosquito Scouts	...	...	...	—	3	Unestablished
Clerks	...	...	...	3	3	
Spraymen, Microscopists	...	...	...	—	170	Daily paid
Drivers, etc.						
<b>Tuberculosis Control:</b>						
Medical Officer	...	...	...	1	1	
Health Visitors	...	...	...	2	2	
T.B. Control Technicians	...	...	...	18	18	1 employed as a clerk
T.B. Assistant Nurses	...	...	...	14	13	
<b>Clerical</b>						
Stenographer	...	...	...	1	1	
Clerks or Clerical Assistants	...	...	...	23	23	

**Also**

Stores Attendants, Drivers, Messenger, Gardeners, and Health Labour.

**Notes**

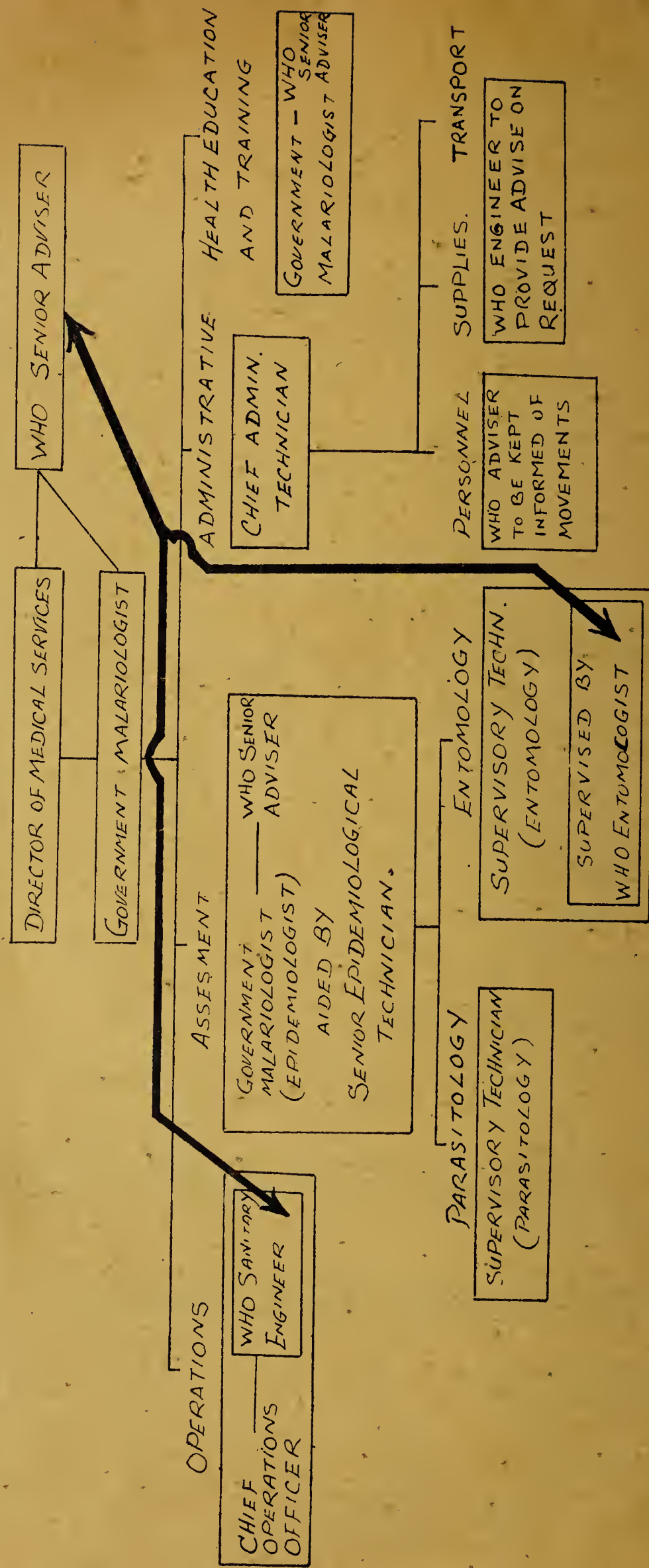
X-ray and Dispensing services operated by hospital assistants who have had additional training. Laboratory staff also supplemented by hospital assistants.

**B. NON-GOVERNMENT MEDICAL PERSONNEL**

Designation				Mission	Estate	Private
Registered Physicians	...	...	...	1	5	14
Nursing Sisters	...	...	...	4	1	1
Health Visitors	...	...	...	1	—	—
Trained Nurses	...	...	...	—	1	—
Trained Hospital Assistants or Dressers	...	...	...	—	52	—
Registered Midwives	...	...	...	5	2	34
Traditional Midwives (with some official in-service training)	...	...	...	—	—	69



# Appendix 2 GENERAL ORGANIZATION OF THE MALARIA ERADICATION PROGRAMME.





**ANNUAL RETURN OF MORBIDITY AND MORTALITY: 1961**  
**TOTAL OUTPATIENTS AND INPATIENTS**

		OUT PATIENTS		IN PATIENTS
		New Cases	Repeat Cases	New Cases admitted during the year
NATIVE	1961	233,570	137,909	12,080
	1960	229,963	116,638	10,917
	1959	194,472	103,810	9,456
	1958	175,680	102,002	8,001
	1957	164,079	69,040	7,671
CHINESE	1961	73,405	100,298	7,522
	1960	77,346	82,589	7,196
	1959	72,765	86,213	6,420
	1958	64,748	76,891	5,980
	1957	66,410	52,768	5,237
OTHERS	1961	14,569	12,537	2,635
	1960	14,299	14,619	2,183
	1959	11,850	13,465	1,696
	1958	15,589	15,348	1,562
	1957	14,053	11,936	1,794
TOTAL	1961	321,544	250,744	22,237
	1960	321,608	213,846	20,296
	1959	279,087	203,388	17,572
	1958	256,017	194,241	15,543
	1957	144,542	133,744	14,702



# RETURN OF MORBIDITY AND MORTALITY FOR THE YEAR, 1961 ALL GOVERNMENT MEDICAL INSTITUTIONS

Intermediate List Numbers	Detailed List Numbers	C A U S E G R O U P S	Outpatient 1st Attendances	Inpatient Admitted	Died in Hospital
A 1	001—008	Tuberculosis of respiratory system	445	1,079	46
A 2	010	Tuberculosis of meninges and central nervous system	—	8	3
A 3	011	Tuberculosis of intestines, peritoneum and mesenteric glands	11	11	—
A 4	012, 013	Tuberculosis of bones and joints	7	36	1
A 5	014—019	Tuberculosis, all other forms	622	431	16
A 6	020	Congenital syphilis	—	1	—
A 7	021	Early syphilis (primary and secondary)	—	—	—
A 8	024	Tabes dorsalis	—	1	—
A 9	025	General paralysis of insane	—	—	—
A 10	022, 023 }	All other syphilis	13	2	—
A 11	026—029 }	Gonococcal infections:	27	2	—
	030—035	(1) Acute	49	3	—
		(2) Other	35	9	—
A 12	040	Typhoid fever	—	16	2
A 13	041, 042	Paratyphoid fever and other salmonella infections	—	—	—
A 14	043	Cholera	—	—	—
A 15	044	Brucellosis (undulant fever)	—	—	—
A 16	045	Bacillary dysentery	139	73	3
(a)	046	Amoebiasis	162	184	8
(b)		Other unspecified forms of dysentery	3,020	84	2
(c)	047, 048	Scarlet fever	—	—	—
A 17	050	Streptococcal sore throat	788	2	—
A 18	051	Erysipelas	9	2	—
A 19	052	Septicæmia and Pyæmia	—	2	2
A 20	053	Diphtheria	5	38	10
A 21	055	Whooping Cough	415	27	1
A 22	056	Meningococcal infections	3	4	3
A 23	057	Plague	—	—	—
A 24	058	Leprosy	2	21	1
A 25	060	Tetanus	2	39	17
A 26	061				



A 27	062	Anthrax	...	...	...	—	—	—
A 28	080	Acute poliomyelitis	...	...	...	—	2	—
A 29	082	Acute infectious encephalitis	...	...	...	—	—	—
A 30	081, 083	Late effects of acute poliomyelitis and acute infectious encephalitis	...	...	...	1	2	1
A 31	084	Small-pox	...	...	...	—	—	—
A 32	085	Measles	...	...	...	419	4	—
A 33	091	Yellow fever	...	...	...	—	—	—
A 34	092	Infectious hepatitis	...	...	...	7	33	2
A 35	094	Rabies	...	...	...	—	—	—
A 36 (a)	100	Louse-borne epidemic typhus	...	...	...	—	—	—
(b)	101	Flea-borne epidemic typhus (murine)	...	...	...	—	—	—
(c)	104	Tick-borne epidemic typhus	...	...	...	—	—	—
(d)	105	Mite-borne typhus	...	...	...	1	—	1
(e)	102—103 } 106—108 }	Other and unspecified typhus	...	...	...	—	—	—
A 37 (a)	110	Vivax Malaria (benign tertian)	...	...	...	311	178	3
(b)	111	Malariae Malaria (quartan)	...	...	...	89	42	1
(c)	112	Falciparum malaria (malignant tertian)	...	...	...	1,186	545	7
(d)	115	Blackwater fever	...	...	...	167	10	1
(e)	113, 114 } 116, 117 }	Other and unspecified forms of malaria	...	...	...	11,127	738	12
A 38 (a)	123.0	Schistosomiasis vesical (S. haematobium)	...	...	...	—	—	—
(b)	123.1	Schistosomiasis intestinal (S. mansoni)	...	...	...	—	—	—
(c)	123.3	Other and unspecified schistosomiasis	...	...	...	—	—	—
A 39	125	Hydatid disease	...	...	...	—	4	—
A 40 (a)	127	Filariasis (bancrofti)	...	...	...	2	—	—
(b)	129	Other filariasis	...	...	...	27	1	—
A 41	126	Ankylostomiasis	...	...	...	2,293	93	—
A 42 (a)	130.0	Tapeworm (infestation) and other cestode infestations	...	...	...	249	1	—
(b)	130.3	Ascariasis	...	...	...	10,581	195	1
(c)	124, 128, } 130.1, 130.2 }	Guinea worm (dracunculosis)	...	...	...	—	—	—
(d)		Other diseases due to helminths	...	...	...	5,125	51	—
A 43 (a)	037	Lymphogranuloma venereum	...	...	...	—	1	—
(b)	038	Granuloma inguinale, venereal	...	...	...	—	—	—



**RETURN OF MORBIDITY AND MORTALITY FOR THE YEAR, 1961 — (cont.)**  
**ALL GOVERNMENT MEDICAL INSTITUTIONS**

Intermediate List Numbers	Detailed List Numbers	C A U S E G R O U P S			Outpatient 1st Attendances	Inpatient Admitted	Died in Hospital
(c)	039	Other and unspecified venereal diseases	...	...	11	—	—
(d)	049	Food poisoning infection and intoxication	...	...	121	13	1
(e)	071	Relapsing fever	...	...	—	—	—
(f)	072	Leptospirosis icterohæmorrhagica (Weil's disease)	...	...	1	—	—
(g)	073	Yaws	...	...	1,649	18	—
(h)	087	Chicken-pox	...	...	1,075	46	—
(i)	090	Dengue	...	...	1	—	—
(j)	095	Trachoma	...	...	209	7	—
(k)	096.7	Sandfly fever	...	...	—	—	—
(l)	120	Leishmaniasis	...	...	—	—	—
(m)	121 (a)	Trypanosomiasis gambiensis	...	...	—	—	—
	(b)	Trypanosomiasis rhodesiensis	...	...	—	—	—
	(c)	Other and unspecified trypanosomiasis	...	...	—	—	—
(n)	131	Dermatophytosis (kurap, etc.)	...	...	6,264	89	—
(o)	135	Scabies	...	...	2,381	19	—
(p)	036, 054, 059, 063, 064, 070, 074, 086, 088, 089, 093, 096.1—096.6, 096.8, 096.9, 122, 132—134, 136—138	All other diseases	...	...	3,262	93	1
	140—148	Classified as infective and parasitic	...	...	—	—	—
A 44	140—148	Malignant neoplasm of buccal cavity and pharynx	...	...	4	1	—
A 45	150	Malignant neoplasm of stomach	...	...	1	22	7
A 46	151	Malignant neoplasm of intestine, except rectum	...	...	11	9	1
A 47	152, 153	Malignant neoplasm of rectum	...	...	97	1	—
A 48	154	Malignant neoplasm of larynx	...	...	—	7	3
A 49	161	Malignant neoplasm of larynx	...	...	—	—	—



A 50	162, 163	Malignant neoplasm of trachea, and of bronchus and lung not specified as secondary	...	...	1	7	2
A 51	170	Malignant neoplasm of breast	...	...	1	10	1
A 52	171	Malignant neoplasm of cervix uteri	...	...	—	6	2
A 53	172—174	Malignant neoplasm of other and unspecified parts of uterus	...	...	10	12	—
A 54	177	Malignant neoplasm of prostate	...	...	—	1	—
A 55	190, 191	Malignant neoplasm of skin	...	...	11	3	—
A 56	196, 197	Malignant neoplasm of bone and connective tissue	...	...	—	3	2
	155—160						
	164, 165						
A 57	175, 176	Malignant neoplasm of all	...	...	25	9	1
	178—181	Other and unspecified sites	...	...	41	39	5
	192—195						
	198, 199						
A 58	204	Leukaemia and aleukaemia	...	...	—	5	2
A 59	200—203, 205	Lymphosarcoma and other neoplasms and haematopoietic system	...	...	—	6	—
A 60	210—239	Benign neoplasms and neoplasms of unspecified nature	...	...	64	37	1
A 61	250, 251	Nontoxic goitre	...	...	344	22	—
A 62	252	Thyrototoxicosis with or without goitre	...	...	51	7	—
A 63	260	Diabetes mellitus	...	...	56	63	2
A 64 (a)	280	Beri-beri	...	...	425	50	1
(b)	281	Pellagra	...	...	1	—	—
(c)	282	Scurvy	...	...	44	2	—
(d)	283—286	Other deficiency states	...	...	5,329	133	2
A 65 (a)	290	Pernicious and other hyperchromic anaemias	...	...	11	3	—
(b)	291	Iron deficiency anaemias (hypochromic)	...	...	965	57	—
(c)	292, 293	Other specified and unspecified anaemias	...	...	14,178	466	6
A 66 (a)	241	Asthma	...	...	2,811	304	6
(b)	240	All other allergic disorders	...	...	1,201	63	1



**RETURN OF MORBIDITY AND MORTALITY FOR THE YEAR, 1961 — (cont.)**  
**ALL GOVERNMENT MEDICAL INSTITUTIONS**

Intermediate List Numbers	Detailed List Numbers	C A U S E G R O U P S			Outpatient 1st Attendances	Inpatient Admitted	Died in Hospital
	242—245 } 253, 254 270—277 } 287—289 294—299 }	Endocrine, metabolic and blood diseases	...	...	87	12	—
A 67	300—309	Psychoses	...	...	43	56	—
A 68	310—324 326	Psychoneuroses and disorders personality	...	...	20	45	—
A 69	325	Mental deficiency	...	...	7	85	—
A 70	300—334	Vascular lesions affecting central nervous system	...	...	3	2	—
A 71	340	Non-meningococcal meningitis	...	...	2	18	7
A 72	345	Multiple sclerosis	...	...	—	1	—
A 73	353	Epilepsy	...	...	69	22	—
A 74	370—379	Inflammatory diseases of eye	...	...	6,345	150	—
A 75	385	Cataract	...	...	78	6	—
A 76	387	Glaucoma	...	...	—	4	—
A 77	390	Otitis externa	...	...	1,410	17	—
(a)	391—393	Otitis media and mastoiditis	...	...	3,305	28	—
(b)	394	Other inflammatory disease of ear	...	...	978	9	1
(c)	380—384	All other diseases and conditions of eye	...	...	1,579	44	—
A 78	386, 388 389						
(b)	341, 344 } 350—352 354—357 } 360—369 395—398 }	All other diseases of the nervous system and sense organs	...	...	838	92	8
A 79	400—402	Rheumatic fever	...	...	7	29	2
A 80	410—416	Chronic rheumatic heart disease	...	...	5	10	2
A 81	420—422	Arteriosclerotic and degenerative heart disease	...	...	3	24	7
A 82	430—434	Other diseases of heart	...	...	180	107	19



A 83	440—443	Hypertension with heart disease	...	...	12	43	12
A 84	444—447	Hypertension without mention of heart	...	...	197	100	11
A 85	450—456	Diseases of arteries	...	...	3	21	3
A 86	460—468	Other diseases of circulatory system	...	...	456	69	5
A 87	470—475	Acute upper respiratory infections	...	...	30,170	376	3
A 88	480—483	Influenza	...	...	13,766	313	—
A 89	490	Lobar pneumonia	...	...	23	113	11
A 90	491	Bronchopneumonia	...	...	182	461	42
A 91	492, 493	Primary a typical, other and unspecified pneumonia	...	...	1,291	260	20
A 92	500	Acute bronchitis	...	...	9,079	611	6
A 93	501, 502	Bronchitis, chronic and unqualified	...	...	16,205	516	5
A 94	510	Hypertrophy of tonsils and adenoids	...	...	5,398	185	2
A 95	518, 521	Empyema and abscess of lung	...	...	29	5	2
A 96	519	Pleurisy	...	...	265	28	—
A 97 (a)	523	Pneumoconiosis	...	...	—	—	—
(b)	511—517						
	520—522	All other respiratory diseases	...	...	4,424	174	9
	524—527						
A 98 (a)	530	Dental caries	...	...	6,544	68	—
A 99 (b)	531—535	All other diseases of teeth and supporting structures	...	...	1,388	39	—
	540	Ulcer of stomach	...	...	58	50	4
A 100	541	Ulcer of duodenum	...	...	40	23	1
A 101	543	Gastritis and duodenitis	...	...	4,775	229	—
A 102	550—553	Appendicitis	...	...	54	175	3
	570	Intestinal obstruction and hernia	...	...	39	71	7
A 103	560, 561						
A 104 (a)	571.0	Gastro-enteritis and colitis between four weeks and two years	...	...			
(b)	571.1	Gastro-enteritis and colitis, ages 2 years and over	...	...	4,386	486	38
(c)	572	Chronic enteritis and ulcerative colitis	...	...	5,710	270	5
A 105	581	Cirrhosis of liver	...	...	95	43	1
A 106	584, 585	Cholelithiasis and cholecystitis	...	...	15	30	4
					8	30	1



**RETURN OF MORBIDITY AND MORTALITY FOR THE YEAR, 1961 — (cont.)**  
**ALL GOVERNMENT MEDICAL INSTITUTIONS**

Intermediate List Numbers	Detailed List Numbers	C A U S E G R O U P S	Outpatient 1st Attendances	Inpatient Admitted	Died in Hospital
A 107	536—539 542, 544 545 573—580 582, 583 586, 587	Other diseases of digestive system	...	419	12
A 108	590	Acute nephritis	...	58	2
A 109	591—594	Chronic, other and unspecified nephritis	...	54	7
A 110	600	Infections of kidney	...	29	1
A 111	602, 604	Calculi of urinary system	...	57	1
A 112	610	Hyperplasia of prostate	...	2	—
A 113	620, 621	Diseases of breast	...	24	—
A 114 (a)	613	Hydrocele	...	16	—
(b)	634	Disorders of menstruation	...	92	—
(c)	601, 603 605—609 611, 612 614—617 622—633 635—637	All other diseases of the Genito-urinary system	884	283	2
A 115	640—641 681, 682 684	Sepsis of pregnancy, childbirth and the puerperium	67	35	3
A 116	642, 652 685, 686	Toxæmias of pregnancy and the puerperium	18	14	2
A 117	643, 664 670—672	Haemorrhage of pregnancy and childbirth	13	37	2
A 118	650	Abortion without mention of sepsis or toxæmia	82	369	—
A 119	651	Abortion with sepsis	7	30	—



A 120 (a)	645—649 673—680 683 687—689	Other complications of pregnancy, childbirth and the puerperium ... ..	128	355	15
(b)	660 690—698 720—725 726, 727 730 737 745—749 715	Delivery without complications ... .. Infections of skin and subcutaneous tissue ... .. Arthritis and spondylitis ... .. Muscular rheumatism and rheumatism unspecified ... .. Osteomyelitis and periostitis ... .. Ankylosis and acquired musculo-skeletal deformities ... .. Chronic ulcer of skin (including tropical ulcer) ... .. All other diseases of skin ... .. All other diseases of musculo-skeletal system ... .. Spina bifida and meningocele ... .. Congenital malformations of circulatory system ... ..	491 18,090 1,806 10,489 85 60 10,018 9,073 18 — 4	2,614 632 151 91 27 6 134 210 5 — 8	— — 1 — — — 4 — — 1 —
A 121	750, 752 753 755—759	All other congenital malformations ... ..	12	29	1
A 122	760, 761 762	Birth injuries ... ..	1	14	6
A 123	764	Post-natal asphyxia and atelectasis ... ..	2	30	7
A 124	765	Diarrhoea of new-born (under four weeks) ... ..	172	80	2
A 125	763, 766—768	Ophthalmia neonatorum ... .. Other infections of new-born ... ..	1 25	5 7	2 10
A 126 (a)	770 769, 771, 772	Haemolytic disease of new-born ... .. All other defined diseases of early infancy ... ..	— 91	2 25	— 7
(b)					
(c)					
A 127					
A 128					
A 129					
A 130					
A 131					
A 132 (a)					
(b)					
(c)					
A 133					
A 134					



RETURN OF MORBIDITY AND MORTALITY FOR THE YEAR, 1961 — (cont.)  
ALL GOVERNMENT MEDICAL INSTITUTIONS

Intermediate List Numbers	Detailed List Numbers	CAUSE GROUPS	Outpatient 1st Attendances	Inpatient Admitted	Died in Hospital
A 135	773, 776	Ill-defined diseases peculiar to early infancy, and immaturity unqualified	4	17	18
A 136	794	Senility without mention of psychosis	165	54	4
A 137 (a)	788.8	Pyrexia of unknown origin	20,634	473	15
(b)	793	Observation, without need for further medical care	7,535	1,227	1
(c)	780—787				
	788.1				
	788.7				
	789.9				
	789—792				
	795				
AE 138	E810—E835	Motor vehicle accidents	211	79	2
AE 139	E800—E802	Other transport accidents	256	77	2
AE 140	E840—E866	Accidental poisoning	55	39	2
AE 141	E870—E895	Accidental falls	3,656	484	13
AE 142	E900—E904	Accident caused by machinery	208	41	—
AE 143	E912	Accident caused by fire and explosion of combustible material	174	24	1
	E916				
AE 144	E917, E918	Accident caused by hot substance corrosive liquid, steam and radiation	813	111	3
AE 145	E919	Accident caused by fire-arm	74	24	—
AE 146	E929	Accidental drowning and submersion	54	5	—
AE 147 (a)	E920	Foreign body entering eye and adnexa	194	18	—
(b)	E923	Foreign body entering other orifice	703	59	—
(c)	E927	Accidents caused by bites and stings of venomous animals and insects	1,284	107	—
(d)	E928	Other accidents caused by animals	362	39	—
	E910, E911				
	E913—E915				
	E921—E922				
	E924—E926				
	E930—E965				
		All other accidental causes	15,013	911	1



AE 148	E970—E979	Suicide and self-inflicted injury ...	36	17	4
AE 149	E980—E985	Homicide and injury purposely inflicted by other persons (not in war) ...	122	57	1
AE 150	E900—E999	Injury resulting from operations of war ...	—	—	—

“N” CODE. ALTERNATIVE CLASSIFICATION OF ACCIDENTS, POISONINGS, AND VIOLENCE  
(NATURE OF INJURY)

Intermediate List Numbers	Detailed List Numbers	CAUSE GROUPS	Outpatient 1st Attendances	Inpatient Admitted	Died in Hospital
AN 138	N800—N804	Fracture of skull ...	414	33	8
AN 139	N805—N809	Fracture of spine and trunk ...	10	34	1
AN 140	N810—N829	Fracture of limbs ...	161	305	2
AN 141	N830—N839	Dislocation without fracture ...	176	46	1
AN 142	N840—N848	Sprains and strains of joints and adjacent muscle ...	6,438	17	—
AN 143	N850—N856	Head injury (excluding fracture) ...	40	86	3
AN 144	N860—N869	Internal injury of chest, abdomen, and pelvis ...	2	11	3
AN 145	N870—N908	Laceration and open wounds ...	9,390	836	2
AN 146	N910—N929	Superficial injury, contusion and crushing with intact skin surface ...	4,253	277	1
AN 147	N930—N936	Effects of foreign body entering through orifice ...	616	62	—
AN 148	N940—N949	Burns ...	961	139	3
AN 149	N960—N979	Effects of poisons ...	290	77	4
AN 150	N950—N959 N980—N999	All other and unspecified effects of external causes ...	1,244	49	—











